Numerical Results for a Projected-Search Interior-Point Method*

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Abstract

Numerical results are presented for a new interior-point method for constrained optimization that combines a shifted primal-dual interior-point method with a projected-search method for bound-constrained optimization. The method involves the computation of an approximate Newton direction for a primal-dual penalty-barrier function that incorporates shifts on both the primal and dual variables. The approximate Newton direction is used in conjunction with a new projected-search line-search algorithm that employs a flexible non-monotone quasi-Armijo line search to obtain an improved value of the penalty-barrier function. The beneficial effects of shifting both the primal and dual variables and the use of a projected search are illustrated by results from two methods that do not use projection. The results show that the all-shifted method is more efficient than the method that shifts only the primal variables. Moreover, the method using projection is more robust and requires substantially fewer iterations. In particular, the number of times that the search direction must be computed is significantly reduced.

1. Introduction

Numerical results are presented for a new interior-point method for general nonlinearly constrained optimization that combines a shifted primal-dual interior-point method with a projected-search method for bound-constrained optimization (see Gill and Zhang [6]). The method involves the computation of an approximate Newton direction for a primal-dual penalty-barrier function that incorporates shifts on both the primal and dual variables. Shifts on the dual variables allow the method to be safely "warm started" from a good approximate solution and avoids the possibility of very large solutions of the associated path-following equations that may occur when the dual variables are close to zero. The approximate Newton direction is used in conjunction with a new projected-search line-search algorithm that employs a flexible non-monotone quasi-Armijo line search to obtain an improved value of the penalty-barrier function. For comparison purposes, results are also given for two primal-dual interior-point methods that do not use projection. The first is a method that shifts both the primal and dual variables. The second is the method of Gill, Kungurtsev and Robinson [3], which involves shifts on the primal variables only. The results show that the use of both primal and dual shifts in conjunction with projection gives a method that is more robust and requires significantly fewer iterations. In particular, the number of times that the search direction must be computed is substantially reduced. Results from a set of quadratic programming test problems indicate that the method is particularly well-suited to solving the quadratic programming subproblem in a sequential quadratic programming method for nonlinear optimization.

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Results are given for solving optimization problems of the form

$$\underset{x}{\text{minimize}} \;\; f(x) \quad \text{subject to} \quad \begin{pmatrix} \ell^X \\ \ell^S \end{pmatrix} \leq \begin{pmatrix} x \\ c(x) \end{pmatrix} \leq \begin{pmatrix} u^X \\ u^S \end{pmatrix}, \tag{1.1}$$

where $c : \mathbb{R}^n \mapsto \mathbb{R}^m$, $f : \mathbb{R}^n \mapsto \mathbb{R}$, and (ℓ^X, ℓ^S) and (u^X, u^S) are constant vectors of lower and upper bounds. In this format, a fixed variable or an equality constraint has the same value for its upper and lower bounds. A variable or constraint with no upper or lower limit is indicated by a bound of $\pm 10^{20}$.

2. Shifted Primal-Dual Interior-Point Methods

In this section we give a brief description of the algorithms to be considered. For brevity, we consider the simplified problem

$$\underset{x \in \mathbb{R}^n, s \in \mathbb{R}^m}{\text{minimize}} \;\; f(x) \quad \text{subject to} \;\; c(x) - s = 0, \quad s \geq 0, \tag{NIP}$$

where $c : \mathbb{R}^n \mapsto \mathbb{R}^m$ and $f : \mathbb{R}^n \mapsto \mathbb{R}$ are twice-continuously differentiable. Complete descriptions of the three methods for problems of the form (1.1) may be found in Gill, Kungurtsev and Robinson [4] and Gill and Zhang [5].

2.1. Algorithm pdProj

This method is based on an approximate Newton method for the sequential minimization of the shifted primal-dual penalty-barrier function

$$\begin{aligned} M(x, s, y, w\,; s^E, y^E, w^E, \mu^P, \mu^B) \\ = f(x) - (c(x) - s)^{\mathrm{T}} y^E + \frac{1}{2\mu^P}\|c(x) - s\|^2 + \frac{1}{2\mu^P}\|c(x) - s + \mu^P(y - y^E)\|^2 \\ - 2\sum_{i=1}^{m} \mu^B(w_i^E + s_i^E + \mu^B)\ln(s_i + \mu^B) - \sum_{i=1}^{m} \mu^B(w_i^E + s_i^E + \mu^B)\ln(w_i + \mu^B) \\ + \sum_{i=1}^{m} w_i(s_i + \mu^B) + 2\mu^B \sum_{i=1}^{m} s_i, \end{aligned}$$

where $y^E \in \mathbb{R}^m$ is an estimate of a Lagrange multiplier vector for the constraint $c(x) - s = 0$, $w^E \in \mathbb{R}^m$ is an estimate of a Lagrange multiplier for the constraint $s \geq 0$, $s^E \in \mathbb{R}^m$ is an estimate of the optimal slacks, and μ^P and μ^B are positive scalars. For brevity, the penalty-barrier function will sometimes be written as $M(v)$, where v is the vector of combined primal and dual variables $v = (x\ ,s,\ y,\ w)$.

In the neighborhood of a solution of (NIP) satisfying certain second-order optimality conditions, the Newton equations for a minimizer of M are equivalent to the Newton equations for a zero of the perturbed optimality conditions

$$\left.\begin{aligned} \nabla f(x) - J(x)^{\mathrm{T}} y = 0, \qquad & y - w = 0, \\ c(x) - s = \mu^P(y^E - y), \qquad & s \geq 0, \\ s \cdot w = \mu^B(w^E - w) + \mu^B(s^E - s), \qquad & w \geq 0. \end{aligned}\right\} \tag{2.1}$$

(See Gill and Zhang [6]). If F is the vector-valued function

$$F(x, s, y, w\,; s^E, y^E, w^E, \mu^P, \mu^B) = \begin{pmatrix} \nabla f(x) - J(x)^{\mathrm{T}} y \\ y - w \\ c(x) - s + \mu^P(y - y^E) \\ s \cdot w - \mu^B(w^E - w + s^E - s) \end{pmatrix}, \tag{2.2}$$

then any point $(x,\, s,\, y,\, w)$ that satisfies the perturbed optimality conditions (2.1) must satisfy $F(x,\, s,\, y,\, w\,;\, s^{E},\, y^{E},\, w^{E},\, \mu^{P},\, \mu^{B}) = 0$.

Algorithm **pdProj** finds the approximate solution of a sequence of bound-constrained minimization problems, with the kth subproblem determined by specific values of s_k^E, y_k^E, w_k^E, μ_k^P, and μ_k^B. Each bound-constrained problem has the generic form

$$\underset{v}{\text{minimize}}\;\; M(v\,;\mu^{P}) \quad \text{subject to} \quad v \in \Omega_k,$$

where Ω_k is the expanded feasible region

$$\Omega_k = \{\, v : v \geq \min\{\, v_k - \sigma(v_k - \ell), 0 \,\}\,\}, \tag{2.3}$$

with σ a fixed positive scalar such that $0 < \sigma < 1$ and $\ell = \big(-\infty, -\mu^{B}e, -\infty, -\mu^{B}e\big)$ (an entry of "$-\infty$" is used to indicate that the associated variable has no lower bound). Let $\mathbf{proj}_{\Omega_k}(v)$ be the projection of v onto Ω_k. Algorithm **pdProj** generates a sequence of feasible iterates $\{v_k\}_{k=0}^{\infty}$ such that $v_{k+1} = \mathbf{proj}_{\Omega_k}(v_k + \alpha_k \Delta v_k)$, where Δv_k is the approximate Newton direction and α_k is a step computed using a flexible quasi-Armijo search.

The flexible quasi-Armijo search involves a line-search Armijo parameter μ^{L} such that $\mu^{L} \geq \mu^{P}$. At an iteration k, let $\psi_k(\alpha\,;\mu)$ and $\phi_k(\alpha\,;\mu)$ denote the functions $M\big(\mathbf{proj}_{\Omega_k}(v_k + \alpha\Delta v_k)\,;\mu\big)$ and $\big\|F\big(\mathbf{proj}_{\Omega_k}(v_k + \alpha\Delta v_k)\,;\mu\big)\big\|$. A step α_k is acceptable if all of the three conditions

$$\psi_k(\alpha_k\,;\mu^{P}) < \max\{\, \psi_k(0\,;\mu^{P}), M_{\max} \,\}, \tag{2.4a}$$

$$\psi_k(\alpha_k\,;\mu^{L}) < \max\{\, \psi_k(0\,;\mu^{L}), M_{\max} \,\}, \quad \text{and} \tag{2.4b}$$

$$\phi_k(\alpha_k\,;\mu^{P}) \leq \eta_{F} \min\{\, \phi_k(0\,;\mu^{P}), \eta_{F}^{m_k} F_{\max} \,\} \tag{2.4c}$$

are satisfied, or

$$\psi_k(\alpha_k\,;\mu_k^{F}) \leq \psi_k(0\,;\mu_k^{F}) + \alpha_k \eta_{A} \nabla M(v_k\,;\mu^{P})^{\mathrm{T}} \Delta v_k, \tag{2.4d}$$

for some value $\mu_k^F \in [\mu^P, \mu^L]$ and some positive $\eta_F < 1$. In these conditions, $M_{\max}$ and $F_{\max}$ are large preassigned parameters and m_k is the number of iterations prior to iteration k at which (2.4a)–(2.4c) were satisfied. In practice the step may be found by reducing α_k by a constant factor until (2.4a)–(2.4c) holds, or (2.4d) is satisfied with either $\mu_k^F = \mu^L$ or $\mu_k^F = \mu^P$. The approximate Newton direction is a descent direction for $\mu_k^F = \mu^P$, but the idea is to choose the larger value $\mu_k^F = \mu^L$ when possible.

On completion of the kth iteration, the next iterate $v_{k+1} = (x_{k+1}, s_{k+1}, y_{k+1}, w_{k+1})$ is designated as an O-iterate, M-iterate or F-iterate. If certain approximate optimality conditions for problem (NIP) are satisfied then v_{k+1} is called an O-iterate. At an O-iterate the parameters are updated as $y_{k+1}^E = y_{k+1}$, $w_{k+1}^E = w_{k+1}$. If the conditions for an O-iteration do not hold and v_{k+1} is an approximate first-order minimizer of $M(v\,; s_k^E, y_k^E, w_k^E, \mu_k^P, \mu_k^B)$ then v_{k+1} is called an M-iterate. At an M-iterate the estimates s_{k+1}^E, y_{k+1}^E and w_{k+1}^E are bounded if necessary by fixed preassigned vectors $s_{\max}$, $y_{\max}$ and $w_{\max}$. An iteration that is neither an O-iteration nor an M-iteration is called an F-iteration. In an F-iteration none of the parameters in M are changed, so that progress is measured solely in terms of the reduction in the merit function. For the precise definitions of an O-, M- and F-iterate, see Gill and Zhang [6].

2.2. Algorithm pdbAll

This method uses the all-shifted penalty-barrier function without projection. In this case, a step length is computed that satisfies the conditions (2.4) with $\psi_k(\alpha\,;\mu)$ and $\phi_k(\alpha\,;\mu)$ defined as $M(v_k + \alpha\Delta v_k\,;\mu)$ and $\|F(v_k + \alpha\Delta v_k)\,;\mu\|$.

2.3. Algorithm pdb

This method is based on an approximate Newton method for the sequential minimization of the shifted primal-dual penalty-barrier function

$$\begin{aligned} M(x,s,y,w\,;y^E,w^E,\mu^P,\mu^B) &= f(x) - (c(x)-s)^{\mathrm{T}}y^E \\ &\quad + \frac{1}{2\mu^P}\|c(x)-s\|^2 + \frac{1}{2\mu^P}\|c(x)-s+\mu^P(y-y^E)\|^2 \\ &\quad - \sum_{i=1}^{m}\mu^B w_i^E \ln\left(s_i+\mu^B\right) - \sum_{i=1}^{m}\mu^B w_i^E \ln\left(w_i(s_i+\mu^B)\right) + \sum_{i=1}^{m} w_i(s_i+\mu^B), \end{aligned} \tag{2.5}$$

where μ^P and μ^B are positive scalars and y^E and w^E denote estimates of the Lagrange multipliers for the constraints $c(x)-s=0$ and $s\geq 0$, respectively.

In the neighborhood of a minimizer of (NIP) satisfying certain second-order optimality conditions, the Newton equations for a minimizer of M are equivalent to the Newton equations for a zero of the perturbed optimality conditions

$$\left.\begin{aligned} \nabla f(x) - J(x)^{\mathrm{T}}y = 0, \qquad & y - w = 0, \\ c(x) - s = \mu^P(y^E - y), \qquad & s \geq 0, \\ s\cdot w = \mu^B(w^E - w), \qquad & w \geq 0. \end{aligned}\right\} \tag{2.6}$$

(See Gill, Kungurtsev and Robinson [3]). If $F(x,\ s,\ y,\ w;\ y^E,\ w^E,\ \mu^P,\ \mu^B)$ denotes the function

$$F(x,s,y,w\,;y^E,w^E,\mu^P,\mu^B) = \begin{pmatrix} \nabla f(x) - J(x)^{\mathrm{T}}y \\ y - w \\ c(x) - s + \mu^P(y-y^E) \\ s\cdot w - \mu^B(w^E - w) \end{pmatrix}, \tag{2.7}$$

then any point $(x,\ s,\ y,\ w)$ that satisfies the perturbed optimality conditions (2.6) must satisfy $F(x,\ s,\ y,\ w\ ;\ y^E,\ w^E,\ \mu^P,\ \mu^B) = 0$.

Algorithm **pdb** also employs a non-monotone flexible quasi-Armijo line search without projection. In this case, a step length is computed that satisfies the conditions (2.4) with $\psi_k(\alpha\,;\mu)$ and $\phi_k(\alpha\,;\mu)$ defined as $M(v_k+\alpha\Delta v_k\,;\mu)$ and $\|F(v_k+\alpha\Delta v_k)\,;\mu\|$, where M and F are the functions (2.5) and (2.7).

3. Control Parameters

The iterates were terminated at the first point that satisfied the conditions $e_P(x,s) < \tau_P$ and $e_D(x,s,y,w) < \tau_D$, where e_P and e_D are the primal and dual infeasibilities

$$e_P(x,s) = \left\| \begin{pmatrix} \min\{0,\ s\} \\ \|c(x)-s\|_\infty / \max\{1,\ \|s\|_\infty\} \end{pmatrix} \right\|_\infty, \tag{3.1a}$$

and

$$e_D(x,s,y,w) = \left\| \begin{pmatrix} \|\nabla f(x) - J(x)^{\mathrm{T}}y\|_\infty/\sigma \\ \|w-y\|_\infty \\ w\cdot\min\{1,\ s\} \end{pmatrix} \right\|_\infty, \tag{3.1b}$$

with $\sigma = \max\{1,\ \|\nabla f(x)\|,\ \max\{1,\ \|y\|\}\|J(x)\|_\infty\}$. Similarly, the iterates were terminated at an infeasible stationary point (x,s) if $e_P(x,s) > \tau_P$, $\min\{0,\ s\} \leq \tau_P$ and $e_I(x,s) \leq \tau_{\inf}$, where

$$e_I(x,s) = \left\|J(x)^{\mathrm{T}}(c(x)-s)\cdot\min\{1,\ s\}\right\|_\infty / \sigma. \tag{3.2}$$

Table 1: Control parameters for Algorithms **pdb**, **pdbAll** and **pdProj**.

Parameter	Description	Value
$s_{\max}$, $y_{\max}$, $w_{\max}$	Maximum allowed y^E, w^E, s^E	`1.0e+6`
μ_0^P	Initial penalty parameter	`1.0e-4`
μ_0^B	Initial barrier parameter	`1.0e-4`
μ_0^L	Initial flexible line-search penalty parameter	`1.0`
τ_0	Initial termination tolerance for specifying an M-iterate	`0.5`
τ_P	Primal feasibility tolerance (3.1a)	`1.0e-4`
τ_D	Dual feasibility tolerance (3.1b)	`1.0e-4`
$\tau_{\inf}$	Infeasible stationary point tolerance (3.2)	`1.0e-4`
$\chi_0^{\max}$	Initial target for an O-iteration	`1.0e+3`
η_A	Line-search Armijo sufficient reduction	`1.0e-2`
η_F	Line-search sufficient reduction for $\|F\|$	`0.9`
γ_A	Line-search factor for reducing an Armijo step	`0.5`
f_{unb}	Unbounded objective	`-1.0e-12`
$M_{\max}$	Constants in line-search tolerance (2.4a) and (2.4b)	`1.0e+12`
$F_{\max}$	Constant in the line-search tolerance (2.4c)	`1.0e+8`
σ	Bound perturbation in the definition of Ω_k (2.3)	`0.8`
$k_{\max}$	Iteration limit	`500`

4. The Test Set

The results were obtained for problems from the CUTEst test collection (see Bongartz et al. [1] and Gould, Orban and Toint [7]). The runs were done using MATLAB version R2022b on an iMac Pro with a 3.0 GHz Intel Xeon W processor and 128 GB of 800 MHz DDR4 RAM running macOS, version 12.6.8 (64 bit). Results were obtained for five subsets of problems from the CUTEst test collection. The subsets consisted of all 126 problems formulated by Hock and Schittkowski ([8]) (problems HS); 139 problems with a general nonlinear objective and upper and lower bounds on the variables (problems BC); 212 problems with a general nonlinear objective, general linear constraints and bounds on the variables (problems LC); 648 problems with a general nonlinear objective, general linear and nonlinear constraints and bounds on the variables (problems NC); and 141 problems with a quadratic objective, general linear constraints and bounds on the variables (problems QP). The NC problems include 264 feasibility problems, i.e., problems with nonlinear constraints but a constant objective function. In an attempt to create a unique solution for comparison purposes, all the feasibility problems were modified to find the feasible point of least Euclidean length. In terms of the problem format (NIP) the constant objective function was replaced by $\frac{1}{2}\|x\|^2$.

The BC, LC, NC and QP subsets were selected based on the number of variables and general constraints. In particular, a problem was chosen if the associated KKT system was of the order of 2000 or less. The same criterion was used to set the dimension of those problems for which the problem size can be specified. The problem `lhaifam` was omitted from the NC set because of a floating-point exception when computing the problem functions at the initial point. Exact second derivatives were used for all the runs.

The 15 problems `britgas`, `concon`, `core1`, `core2`, `gridgena`, `hs67`, `hs85`, `hs87`, `mconcon`, `net1`, `net2`, `net3`, `stancmin`, `twirimd1`, and `twirism1` are non-smooth, but are included in the test-set nevertheless. The 8 problems `gridgena`, `lukvle2`, `lukvli4`, `mesh`, `ncvxbqp1`, `ncvxbqp2`, `qrtquad`, and `static3` have an objective function that is unbounded below in the feasible region.

Many of the problems are either infeasible or have no known feasible point. The problems `model` and `nash`, have infeasible linear constraints. (`nash` is feasible if the constraints are perturbed by 10^{-4}.) For nonlinear constraints, no local optimization method is guaranteed to find a feasible point unless certain restrictions are imposed on the class of constraint

Table 2: The CUTEst problems listed by frequency and type.

Type	Frequency	Characteristics
HS	126	All objective and constraints types
BC	139	Nonlinear objective, bound constraints
LC	212	Nonlinear objective, linear constraints
NC	648	Nonlinear objective, nonlinear constraints
QP	141	Quadratic objective, linear constraints

functions. In the nonlinear case, the failure of an algorithm to find a feasible point does not imply that the problem is infeasible. In the CUTEst test set, the nonlinear problem `burkehan` is known to be infeasible. The problems `junkturn`, `lubrif`, and `lubrifc`. have no known feasible point (`junkturn` is feasible if the constraints are perturbed by 10^{-3}.)

5. Performance Profiles

For an interior-point method, the overall cpu-time is dominated by the cost of solving a KKT system at each iteration and the function evaluations. The function-evaluation and iteration performance of the solvers is summarized using performance profiles (in $\log_2$ scale) given in Figures 2–5. The performance profiles were proposed by Dolan and Moré [2]. Let $\mathcal{P}$ denote a set of problems used for a given numerical experiment. For each method s we define the function $\pi_s : [0, r_{_M}] \mapsto \mathbb{R}^+$ such that

$$\pi_s(\tau) = \frac{1}{n_p} \left| \{ \, p \in \mathcal{P} : \log_2(r_{p,s}) \leq \tau \, \} \right|,$$

where n_p is the number of problems in the test set and $r_{p,s}$ denotes the ratio of the number of function evaluations needed to solve problem p with method s and the least number of function evaluations needed to solve problem p. If method s failed for problem p, then $r_{p,s}$ is set to be twice the maximal ratio. The parameter $r_{_M}$ is the maximum value of $\log_2(r_{p,s})$. Figures 1–5 give the function-evaluation and iteration performance profiles for the HS, BC, LC, NC and QP test-sets respectively. The profiles show the benefits of shifting both primal and dual variables, as well as using a projected-search method based on the primal-dual search direction. The proposed method `pdProj` outperforms the other two solvers in terms of both efficiency and robustness.

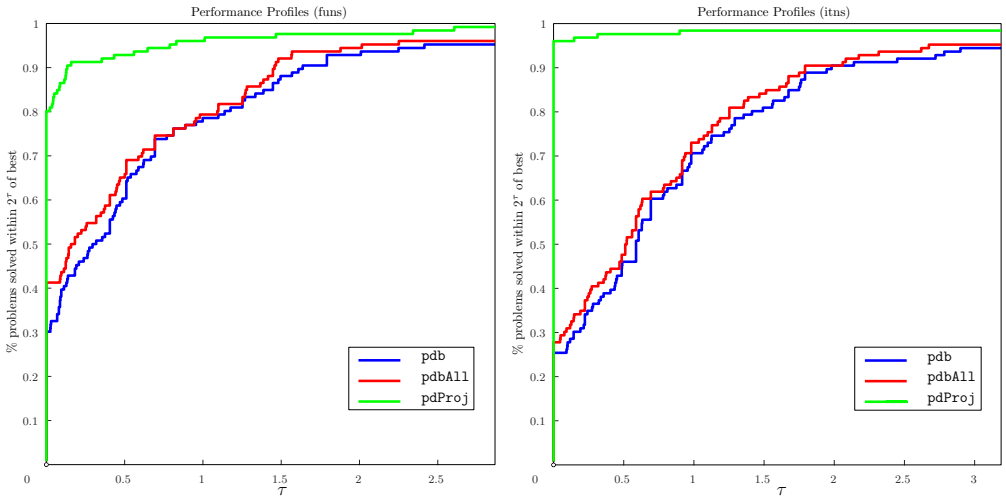

Figure 1: Performance profiles for the primal-dual interior-point algorithms `pdb`, `pdbAll` and `pdProj` applied to all 126 Hock-Schittkowski (HS) problems from the CUTEst test set. The left figure gives the profiles for the number of function evaluations. The right figure gives the profiles for the number of iterations.

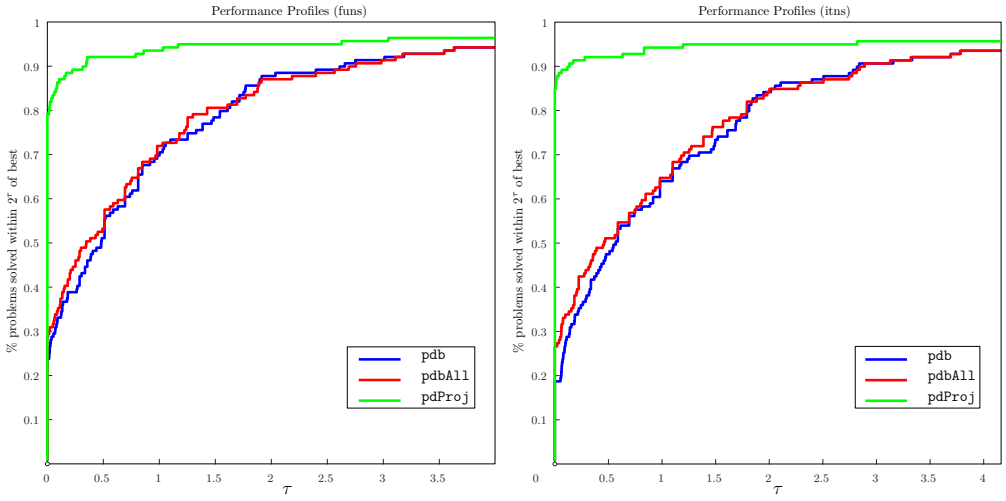

Figure 2: Performance profiles for the primal-dual interior-point algorithms `pdb`, `pdbAll` and `pdProj` applied to 139 bound-constrained (BC) problems from the CUTEst test set. The left figure gives the profiles for the number of function evaluations. The right figure gives the profiles for the number of iterations.

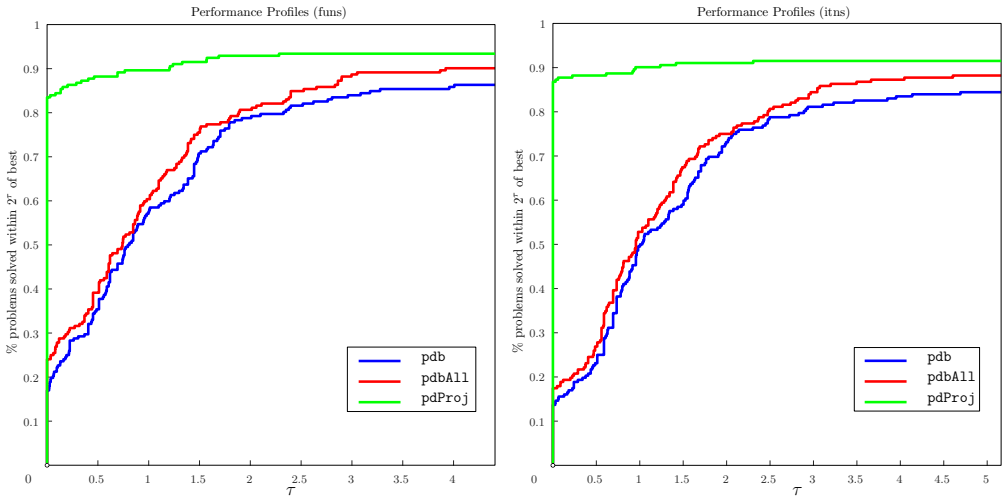

Figure 3: Performance profiles for the primal-dual interior-point algorithms `pdb`, `pdbAll` and `pdProj` applied to 212 linearly constrained (LC) problems from the CUTEst test set. The left figure gives the profiles for the number of function evaluations. The right figure gives the profiles for the number of iterations.

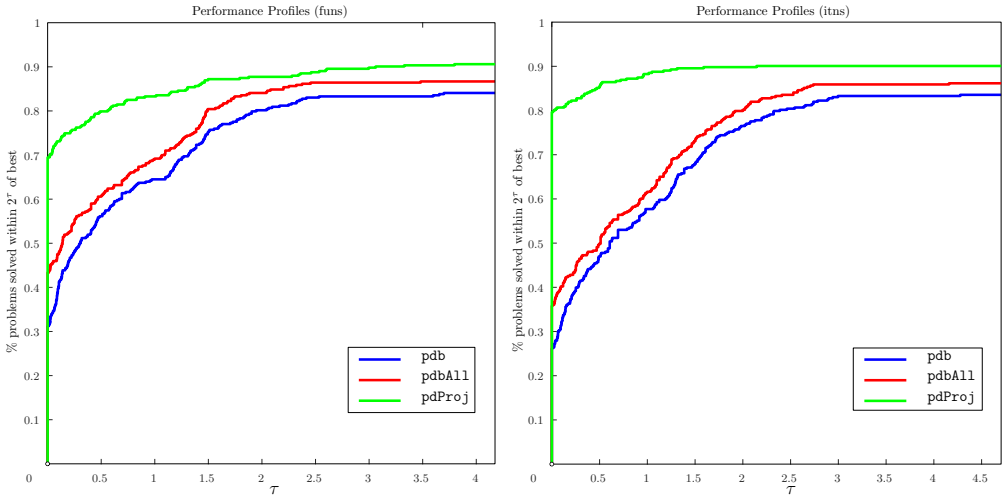

Figure 4: Performance profiles for the primal-dual interior-point algorithms `pdb`, `pdbAll` and `pdProj` applied to 648 nonlinearly constrained (NC) problems from the CUTEst test set. The left figure gives the profiles for the number of function evaluations. The right figure gives the profiles for the number of iterations.

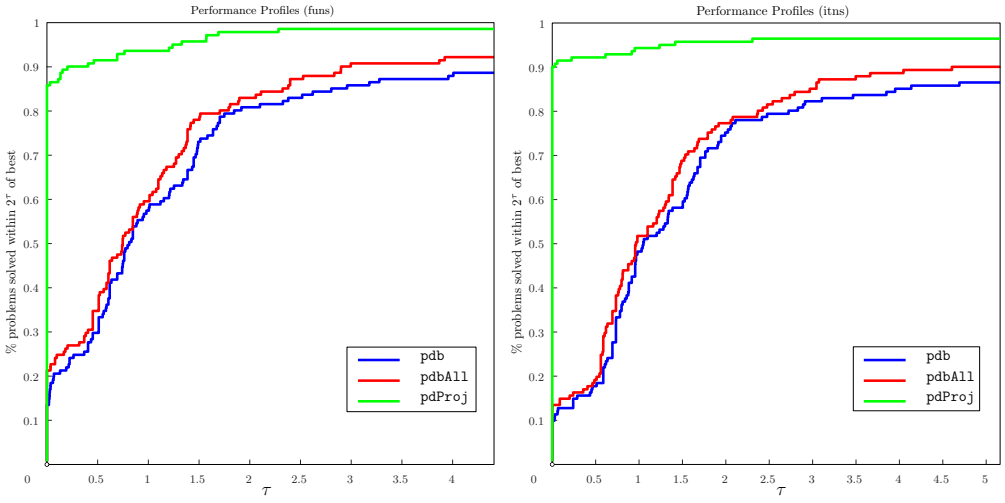

Figure 5: Performance profiles for the primal-dual interior-point algorithms `pdb`, `pdbAll` and `pdProj` applied to 141 quadratic programming (QP) problems from the CUTEst test set. The left figure gives the profiles for the number of function evaluations. The right figure gives the profiles for the number of iterations.

6. Numerical Results

For each problem, the tables list the following: the number of variables "n"; the number of general constraints "m"; the number of iterations taken "Itn"; the number of function evaluations required "Fe"; and the final objective value "Objective". The last column provides details of any non-optimal exits. An empty entry in the "Exit" column indicates an optimal exit. The letters "unb" mark the problems judged to be unbounded; "stny" indicates an infeasible stationary point; "ls" means that the line search could not find a sufficiently better point; "a" means that there was an abnormal exit because of numerical difficulties; and "near" means that a near-optimal point was found. The final point is considered to be near optimal if the iteration limit was exceeded and one of the primal-dual infeasibilities (3.1a) or (3.1b) was optimal but the other was only within 10^{-1} of optimality.

Tables 3–7 give details of the runs for the HS, BC, LC, NC and QP test-sets respectively.

Table 3: Results on 126 CUTEst Hock-Schittkowski (HS) problems

Problem	Solver	Fe	Itn	Obj	Inf	Exit
HS1	pdb	34	31	6.2221360e-12	0.0000000e+00	
n = 2	pdbAll	33	27	1.9841538e-14	0.0000000e+00	
m = 0	pdProj	33	25	2.5477836e-18	0.0000000e+00	
HS2	pdb	42	40	4.9412293e+00	1.6914131e-09	
n = 2	pdbAll	25	23	4.9412279e+00	3.0977011e-07	
m = 0	pdProj	55	9	4.9412283e+00	2.2164586e-07	
HS3	pdb	7	6	7.1039773e-09	0.0000000e+00	
n = 2	pdbAll	7	6	2.9103346e-08	0.0000000e+00	
m = 0	pdProj	2	1	9.9990001e-05	0.0000000e+00	
HS3MOD	pdb	7	6	2.7105054e-20	0.0000000e+00	
n = 2	pdbAll	7	6	2.2001000e-08	0.0000000e+00	
m = 0	pdProj	2	1	9.9990001e-05	0.0000000e+00	
HS4	pdb	6	5	2.6666669e+00	0.0000000e+00	
n = 2	pdbAll	6	5	2.6666670e+00	0.0000000e+00	
m = 0	pdProj	3	2	2.6671933e+00	0.0000000e+00	
HS5	pdb	9	8	-1.9132229e+00	0.0000000e+00	
n = 2	pdbAll	9	8	-1.9132230e+00	0.0000000e+00	
m = 0	pdProj	5	4	-1.9132230e+00	0.0000000e+00	
HS6	pdb	43	12	0.0000000e+00	0.0000000e+00	
n = 2	pdbAll	43	12	0.0000000e+00	0.0000000e+00	
m = 1	pdProj	43	12	0.0000000e+00	0.0000000e+00	
HS7	pdb	33	11	-1.7320554e+00	1.6069121e-05	
n = 2	pdbAll	33	11	-1.7320554e+00	1.6069121e-05	
m = 1	pdProj	37	11	-1.7320577e+00	2.4042697e-05	
HS8	pdb	6	4	-1.0000000e+00	1.1704158e-08	
n = 2	pdbAll	6	4	-1.0000000e+00	1.1704158e-08	
m = 2	pdProj	6	4	-1.0000000e+00	1.1704158e-08	
HS9	pdb	6	5	-5.0000000e-01	0.0000000e+00	
n = 2	pdbAll	6	5	-5.0000000e-01	0.0000000e+00	
m = 1	pdProj	6	5	-5.0000000e-01	0.0000000e+00	

Table 3: Results on 126 CUTEst HS problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
HS10	pdb	9	8	-1.0000009e+00	1.6555802e-06	
n = 2	pdbAll	9	8	-1.0000009e+00	1.6555798e-06	
m = 1	pdProj	9	8	-1.0000009e+00	1.6555798e-06	
HS11	pdb	6	5	-8.4984640e+00	3.4017650e-08	
n = 2	pdbAll	6	5	-8.4984640e+00	3.4006285e-08	
m = 1	pdProj	6	5	-8.4984641e+00	2.8935550e-08	
HS12	pdb	15	11	-3.0000000e+01	6.7645605e-09	
n = 2	pdbAll	15	11	-3.0000000e+01	3.8681334e-09	
m = 1	pdProj	203	27	-3.0000000e+01	3.6330833e-09	
HS13	pdb	50	49	8.9107766e-01	8.8107229e-05	
n = 2	pdbAll	43	42	8.9103346e-01	8.8179497e-05	
m = 1	pdProj	38	37	8.9272848e-01	8.5417826e-05	
HS14	pdb	6	5	1.3934648e+00	6.9895811e-08	
n = 2	pdbAll	6	5	1.3934648e+00	6.9825106e-08	
m = 2	pdProj	5	4	1.3934530e+00	4.3928807e-06	
HS15	pdb	36	32	3.0661854e+02	7.1415639e-06	
n = 2	pdbAll	36	32	3.0661268e+02	3.3270719e-05	
m = 2	pdProj	23	17	3.0633830e+02	5.0973387e-05	
HS16	pdb	25	24	2.3143397e+01	1.9626504e-05	
n = 2	pdbAll	22	21	2.3144286e+01	5.7961319e-06	
m = 2	pdProj	42	12	2.5000061e-01	1.2650931e-05	
HS17	pdb	39	38	1.0000008e+00	1.6244929e-06	
n = 2	pdbAll	33	32	9.9998616e-01	1.0652561e-05	
m = 2	pdProj	20	13	1.0000460e+00	1.2358851e-05	
HS18	pdb	47	40	4.9994058e+00	1.3108160e-05	
n = 2	pdbAll	35	30	4.9993479e+00	1.4359206e-05	
m = 2	pdProj	41	13	5.0000020e+00	1.1864213e-06	
HS19	pdb	32	31	-6.9618371e+03	3.6551026e-05	
n = 2	pdbAll	32	31	-6.9618174e+03	5.4987412e-06	
m = 2	pdProj	9	8	-6.9617382e+03	3.6970794e-05	
HS20	pdb	13	12	4.0197451e+01	1.5687603e-05	
n = 2	pdbAll	13	12	4.0198051e+01	8.3139218e-06	
m = 3	pdProj	7	5	4.0194484e+01	5.2289241e-05	
HS21	pdb	17	16	-9.9960000e+01	4.5408250e-06	
n = 2	pdbAll	17	16	-9.9960000e+01	2.3571633e-06	
m = 1	pdProj	4	3	-9.9960004e+01	7.8204606e-05	
HS21MOD	pdb	17	16	-9.5960000e+01	4.5408250e-06	
n = 7	pdbAll	17	16	-9.5960000e+01	2.3571633e-06	
m = 1	pdProj	4	3	-9.5960004e+01	7.8204606e-05	
HS22	pdb	5	4	9.9999991e-01	4.6025720e-08	
n = 2	pdbAll	5	4	9.9999991e-01	4.6018872e-08	
m = 2	pdProj	5	4	9.9999991e-01	4.6018872e-08	
HS23	pdb	16	15	2.0000308e+00	3.7399995e-05	

Table 3: Results on 126 CUTEst HS problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 2	pdbAll	16	15	1.9999978e+00	4.6449798e-07	
m = 5	pdProj	11	8	1.9999993e+00	2.2477171e-07	
HS24	pdb	16	15	-9.9999996e-01	1.3738485e-08	
n = 2	pdbAll	13	12	-1.0000087e+00	2.0044254e-05	
m = 3	pdProj	9	8	-1.0000001e+00	7.6511127e-08	
HS25	pdb	1	0	3.2835000e+01	0.0000000e+00	
n = 3	pdbAll	1	0	3.2835000e+01	0.0000000e+00	
m = 0	pdProj	1	0	3.2835000e+01	0.0000000e+00	
HS26	pdb	13	12	2.4660757e-08	8.8273928e-05	
n = 3	pdbAll	13	12	2.4660757e-08	8.8273928e-05	
m = 1	pdProj	13	12	2.4660757e-08	8.8273928e-05	
HS27	pdb	66	12	3.9999999e-02	2.6162233e-08	
n = 3	pdbAll	66	12	3.9999999e-02	2.6162233e-08	
m = 1	pdProj	66	12	3.9999999e-02	2.6162233e-08	
HS28	pdb	2	1	0.0000000e+00	0.0000000e+00	
n = 3	pdbAll	2	1	0.0000000e+00	0.0000000e+00	
m = 1	pdProj	2	1	0.0000000e+00	0.0000000e+00	
HS29	pdb	17	15	-2.2627417e+01	4.2970228e-07	
n = 3	pdbAll	17	15	-2.2627417e+01	3.7194326e-07	
m = 1	pdProj	39	13	-2.2627417e+01	2.8749309e-07	
HS30	pdb	11	10	1.0000540e+00	5.3888030e-05	
n = 3	pdbAll	10	9	1.0000448e+00	4.4879136e-05	
m = 1	pdProj	8	7	1.0000972e+00	9.7309277e-05	
HS31	pdb	30	29	5.9999754e+00	4.0945782e-06	
n = 3	pdbAll	26	25	5.9999193e+00	1.3451619e-05	
m = 1	pdProj	6	5	5.9999998e+00	2.1064663e-08	
HS32	pdb	12	11	1.0007007e+00	2.8594202e-06	
n = 3	pdbAll	12	11	1.0000839e+00	3.4676944e-07	
m = 2	pdProj	6	5	1.0000029e+00	2.0222237e-07	
HS33	pdb	51	50	-4.5857592e+00	4.0390042e-05	
n = 3	pdbAll	33	32	-4.5857713e+00	2.7318507e-05	
m = 2	pdProj	36	19	-4.5857884e+00	1.6515291e-05	
HS34	pdb	26	25	-8.3402648e-01	6.7002267e-05	
n = 3	pdbAll	20	19	-8.3403023e-01	4.5381501e-05	
m = 2	pdProj	208	26	-8.3403247e-01	1.2677525e-07	
HS35	pdb	10	9	1.1128385e-01	2.6997606e-07	
n = 3	pdbAll	10	9	1.1122245e-01	1.9646960e-07	
m = 1	pdProj	6	5	1.1111140e-01	1.9632392e-08	
HS35I	pdb	10	9	1.1124662e-01	2.5039471e-07	
n = 3	pdbAll	10	9	1.1119507e-01	1.7661377e-07	
m = 1	pdProj	6	5	1.1111166e-01	2.8988885e-08	
HS35MOD	pdb	12	11	2.5008190e-01	8.1283831e-07	
n = 3	pdbAll	11	10	2.5008352e-01	8.1008286e-07	

Table 3: Results on 126 CUTEst HS problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 1	pdProj	8	7	2.5002677e-01	4.5570724e-07	
HS36	pdb	14	13	-3.2992995e+03	9.9277068e-05	
n = 3	pdbAll	14	13	-3.2993519e+03	9.3589589e-05	
m = 1	pdProj	9	8	-8.9987954e-12	3.7419934e-08	
HS37	pdb	17	16	-3.4560075e+03	7.2043026e-07	
n = 3	pdbAll	17	16	-3.4560057e+03	5.4963245e-07	
m = 2	pdProj	7	6	-3.4559843e+03	1.4991053e-06	
HS38	pdb	54	43	2.1261364e-11	0.0000000e+00	
n = 4	pdbAll	66	41	2.9682615e-18	0.0000000e+00	
m = 0	pdProj	56	39	4.7219124e-21	0.0000000e+00	
HS39	pdb	15	11	-1.0000009e+00	4.7906487e-07	
n = 4	pdbAll	15	11	-1.0000009e+00	4.7906487e-07	
m = 2	pdProj	15	11	-1.0000009e+00	4.7906487e-07	
HS40	pdb	4	3	-2.5000084e-01	1.3368672e-06	
n = 4	pdbAll	4	3	-2.5000084e-01	1.3368672e-06	
m = 3	pdProj	4	3	-2.5000084e-01	1.3368672e-06	
HS41	pdb	30	29	1.9259186e+00	6.7230663e-05	
n = 4	pdbAll	24	23	1.9259177e+00	7.6914045e-05	
m = 1	pdProj	5	4	1.9259230e+00	8.1753753e-06	
HS42	pdb	5	4	1.3857845e+01	7.7125290e-06	
n = 4	pdbAll	5	4	1.3857845e+01	7.7125290e-06	
m = 2	pdProj	5	4	1.3857845e+01	7.7125290e-06	
HS43	pdb	13	12	-4.4000081e+01	3.5254001e-05	
n = 4	pdbAll	12	11	-4.4000121e+01	5.2859714e-05	
m = 3	pdProj	8	6	-4.4000000e+01	4.8841642e-08	
HS44	pdb	44	43	-1.3000012e+01	7.8580974e-07	
n = 4	pdbAll	40	39	-1.3000001e+01	1.1303452e-07	
m = 6	pdProj	10	9	-1.4999933e+01	8.5574672e-07	
HS44NEW	pdb	15	14	-1.4999992e+01	6.2174109e-08	
n = 4	pdbAll	14	13	-1.4999975e+01	1.6990228e-07	
m = 6	pdProj	16	7	-1.5000000e+01	3.6778289e-11	
HS45	pdb	9	8	1.0003783e+00	4.9222080e-07	
n = 5	pdbAll	9	8	1.0003490e+00	4.6559949e-07	
m = 0	pdProj	4	3	9.9983459e-01	4.6294356e-05	
HS46	pdb	14	12	1.3637595e-07	8.2700463e-05	
n = 5	pdbAll	14	12	1.3637595e-07	8.2700463e-05	
m = 2	pdProj	14	12	1.3637595e-07	8.2700463e-05	
HS47	pdb	21	13	1.7917613e-07	2.9720892e-05	
n = 5	pdbAll	21	13	1.7917613e-07	2.9720892e-05	
m = 3	pdProj	21	13	1.7917613e-07	2.9720892e-05	
HS48	pdb	2	1	0.0000000e+00	0.0000000e+00	
n = 5	pdbAll	2	1	0.0000000e+00	0.0000000e+00	
m = 2	pdProj	2	1	0.0000000e+00	0.0000000e+00	
HS49	pdb	12	11	4.5732460e-06	4.4408921e-16	

Table 3: Results on 126 CUTEst HS problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 5	pdbAll	12	11	4.5732460e-06	4.4408921e-16	
m = 2	pdProj	12	11	4.5732460e-06	4.4408921e-16	
HS50	pdb	9	8	8.4129508e-13	7.3360713e-07	
n = 5	pdbAll	9	8	8.4129508e-13	7.3360713e-07	
m = 3	pdProj	9	8	8.4129508e-13	7.3360713e-07	
HS51	pdb	2	1	0.0000000e+00	0.0000000e+00	
n = 5	pdbAll	2	1	0.0000000e+00	0.0000000e+00	
m = 3	pdProj	2	1	0.0000000e+00	0.0000000e+00	
HS52	pdb	3	2	5.3266416e+00	5.8404263e-07	
n = 5	pdbAll	3	2	5.3266416e+00	5.8404263e-07	
m = 3	pdProj	3	2	5.3266416e+00	5.8404263e-07	
HS53	pdb	9	8	4.0928843e+00	6.7755640e-05	
n = 5	pdbAll	9	8	4.0930232e+00	2.3335990e-09	
m = 3	pdProj	4	3	4.0930243e+00	1.5198175e-07	
HS54	pdb	18	17	-8.6731969e-01	7.0888294e-05	
n = 6	pdbAll	8	7	-1.5502868e-01	2.0008883e-11	
m = 1	pdProj	3	2	-1.5396022e-01	3.4664481e-08	
HS55	pdb	24	23	6.6666518e+00	2.2387171e-05	
n = 6	pdbAll	22	21	6.6666655e+00	1.7523836e-06	
m = 6	pdProj	5	4	6.6666901e+00	3.7988759e-05	
HS56	pdb	10	7	-3.4560000e+00	3.6653747e-09	
n = 7	pdbAll	10	7	-3.4560000e+00	3.6653747e-09	
m = 4	pdProj	10	7	-3.4560000e+00	3.6653747e-09	
HS57	pdb	6	5	3.0646302e-02	1.0851594e-06	
n = 2	pdbAll	6	5	3.0646300e-02	9.5607815e-07	
m = 1	pdProj	3	2	3.0646358e-02	1.3125032e-05	
HS59	pdb	--	--	-1.9799889e+00	5.0288460e-06	itn
n = 2	pdbAll	2761	385	-6.7467698e+00	1.7913855e-07	
m = 3	pdProj	577	48	-6.7494953e+00	1.0064153e-06	
HS60	pdb	10	9	3.2568678e-02	4.4581149e-05	
n = 3	pdbAll	8	7	3.2568206e-02	5.7882981e-07	
m = 1	pdProj	5	4	3.2569220e-02	9.4781906e-05	
HS61	pdb	47	23	-1.4364622e+02	3.3940016e-05	
n = 3	pdbAll	47	23	-1.4364622e+02	3.3940016e-05	
m = 2	pdProj	42	19	-1.4364614e+02	7.4800026e-08	
HS62	pdb	18	17	-2.6272963e+04	7.0232571e-05	
n = 3	pdbAll	17	16	-2.6272973e+04	7.1819801e-05	
m = 1	pdProj	12	11	-2.6272929e+04	6.4848312e-05	
HS63	pdb	10	9	9.6171521e+02	2.9857129e-05	
n = 3	pdbAll	9	8	9.6171528e+02	9.7467779e-05	
m = 2	pdProj	7	5	9.6171517e+02	1.1652803e-06	
HS64	pdb	32	31	6.2998361e+03	3.0385357e-06	
n = 3	pdbAll	23	22	6.2998413e+03	4.9997912e-07	

Table 3: Results on 126 CUTEst HS problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 1	pdProj	20	19	6.2998424e+03	2.8503532e-09	
HS65	pdb	41	40	9.5352080e-01	9.7860942e-05	
n = 3	pdbAll	35	34	9.5352675e-01	3.5992540e-05	
m = 1	pdProj	22	11	9.5352586e-01	3.6297647e-05	
HS66	pdb	20	19	5.1816143e-01	2.3946313e-05	
n = 3	pdbAll	15	14	5.1816319e-01	4.4208541e-07	
m = 2	pdProj	5	4	5.1816323e-01	1.0043303e-07	
HS67	pdb	16	15	-1.1620709e+03	1.8301428e-06	
n = 3	pdbAll	16	15	-1.1620835e+03	1.3191420e-06	
m = 14	pdProj	8	6	-1.1621162e+03	3.6082014e-07	
HS68	pdb	22	21	-9.2099173e-01	4.1225500e-05	
n = 4	pdbAll	20	19	-9.2071656e-01	2.1243314e-05	
m = 2	pdProj	35	22	-9.2041698e-01	6.3144255e-07	
HS69	pdb	15	14	-9.5671366e+02	1.5315079e-05	
n = 4	pdbAll	14	13	-9.5671490e+02	4.0175905e-05	
m = 2	pdProj	14	10	-9.5671291e+02	2.5331790e-06	
HS70	pdb	26	25	7.4985168e-03	5.9704379e-10	
n = 4	pdbAll	22	21	7.4985253e-03	4.4705200e-06	
m = 1	pdProj	17	16	7.4985080e-03	4.1270729e-06	
HS71	pdb	33	32	1.7014006e+01	3.4577017e-05	
n = 4	pdbAll	30	29	1.7014017e+01	7.7003617e-08	
m = 2	pdProj	26	9	1.7014017e+01	8.4581008e-08	
HS72	pdb	35	34	7.2661502e+02	2.6103236e-05	
n = 4	pdbAll	35	34	7.2564944e+02	5.0481826e-05	
m = 2	pdProj	32	31	7.2374713e+02	9.8482840e-05	
HS73	pdb	15	14	2.9894674e+01	3.3216677e-05	
n = 4	pdbAll	15	14	2.9894608e+01	2.9483389e-05	
m = 3	pdProj	17	11	2.9894382e+01	2.5757393e-06	
HS74	pdb	38	37	5.1264976e+03	4.9605904e-05	
n = 4	pdbAll	36	35	5.1264981e+03	1.6515987e-08	
m = 5	pdProj	10	9	5.1264981e+03	2.0773638e-06	
HS75	pdb	46	45	5.1742001e+03	7.6288478e-05	
n = 4	pdbAll	43	42	5.1741379e+03	9.8630670e-05	
m = 5	pdProj	38	29	5.1744102e+03	3.6330363e-06	
HS76	pdb	10	9	-4.6812405e+00	2.5377996e-07	
n = 4	pdbAll	10	9	-4.6813853e+00	2.0302763e-07	
m = 3	pdProj	6	5	-4.6818182e+00	6.0918031e-05	
HS76I	pdb	10	9	-4.6812505e+00	2.7534665e-07	
n = 4	pdbAll	10	9	-4.6813485e+00	2.3800974e-07	
m = 3	pdProj	6	5	-4.6818182e+00	6.0976537e-05	
HS77	pdb	9	7	2.4150509e-01	4.3714745e-05	
n = 5	pdbAll	9	7	2.4150509e-01	4.3714745e-05	
m = 2	pdProj	9	7	2.4150509e-01	4.3714745e-05	
HS78	pdb	5	4	-2.9197004e+00	8.1308560e-10	

Table 3: Results on 126 CUTEst HS problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 5	pdbAll	5	4	-2.9197004e+00	8.1308560e-10	
m = 3	pdProj	5	4	-2.9197004e+00	8.1308560e-10	
HS79	pdb	5	4	7.8776821e-02	1.0463767e-08	
n = 5	pdbAll	5	4	7.8776821e-02	1.0463767e-08	
m = 3	pdProj	5	4	7.8776821e-02	1.0463767e-08	
HS80	pdb	10	9	5.3945276e-02	8.4480297e-05	
n = 5	pdbAll	9	8	5.3949799e-02	8.1481870e-07	
m = 3	pdProj	6	5	5.3949839e-02	1.6724623e-07	
HS81	pdb	12	11	5.3947442e-02	4.3354199e-05	
n = 5	pdbAll	11	10	5.3949823e-02	4.2164480e-07	
m = 3	pdProj	8	6	5.3949296e-02	9.9812782e-06	
HS83	pdb	58	57	-3.0670093e+04	5.3995816e-05	
n = 5	pdbAll	51	50	-3.0668083e+04	2.9408718e-05	
m = 3	pdProj	13	11	-3.0664607e+04	9.1184864e-06	
HS84	pdb	24	20	-5.2796045e+06	3.6292998e-05	
n = 5	pdbAll	24	20	-5.2796887e+06	3.3429254e-05	
m = 3	pdProj	37	8	-5.2803338e+06	4.8541208e-07	
HS85	pdb	3	2	-1.2554087e+00	1.1379381e-08	
n = 5	pdbAll	3	2	-1.2554092e+00	1.1388487e-08	
m = 21	pdProj	2	1	-1.2542912e+00	7.3725998e-10	
HS86	pdb	82	81	-3.2348667e+01	2.0201298e-05	
n = 5	pdbAll	72	71	-3.2348677e+01	1.9567655e-05	
m = 10	pdProj	11	7	-3.2349049e+01	5.9625272e-05	
HS87	pdb	--	--	8.9966851e+03	2.9788875e-02	ls
n = 6	pdbAll	--	--	8.9966851e+03	2.9789926e-02	ls
m = 4	pdProj	--	--	9.1966300e+03	3.8161484e-02	ls
HS88	pdb	44	43	1.3272521e+00	3.8313704e-05	
n = 2	pdbAll	50	43	1.3272525e+00	3.8313239e-05	
m = 1	pdProj	50	43	1.3273064e+00	3.8246875e-05	
HS89	pdb	46	45	1.3273785e+00	3.8158117e-05	
n = 3	pdbAll	46	45	1.3273784e+00	3.8158260e-05	
m = 1	pdProj	52	45	1.3272651e+00	3.8297733e-05	
HS90	pdb	44	43	1.3274758e+00	3.8038384e-05	
n = 4	pdbAll	44	43	1.3274753e+00	3.8039001e-05	
m = 1	pdProj	46	43	1.3272228e+00	3.8349801e-05	
HS91	pdb	46	45	1.3272515e+00	3.8314500e-05	
n = 5	pdbAll	46	45	1.3272518e+00	3.8314121e-05	
m = 1	pdProj	48	45	1.3273054e+00	3.8248112e-05	
HS92	pdb	48	43	1.3273560e+00	3.8185833e-05	
n = 6	pdbAll	44	43	1.3273561e+00	3.8185697e-05	
m = 1	pdProj	45	43	1.3274231e+00	3.8103218e-05	
HS93	pdb	13	12	1.3506815e+02	6.1736194e-05	
n = 6	pdbAll	13	12	1.3506821e+02	6.1229847e-05	

Table 3: Results on 126 CUTEst HS problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 2	pdProj	5	4	1.3506639e+02	7.2568092e-05	
HS95	pdb	13	12	1.5684889e-02	2.5789118e-05	
n = 6	pdbAll	12	11	1.5748177e-02	8.3192205e-05	
m = 4	pdProj	52	8	1.5448122e-02	5.1265367e-06	
HS96	pdb	13	12	1.5711436e-02	2.3266862e-05	
n = 6	pdbAll	12	11	1.5792072e-02	7.4761710e-05	
m = 4	pdProj	33	6	1.1998835e-02	5.7741327e-05	
HS97	pdb	75	74	4.0702308e+00	3.6825564e-05	
n = 6	pdbAll	73	72	4.0706389e+00	2.3563439e-05	
m = 4	pdProj	104	22	3.1491181e+00	6.6481873e-06	
HS98	pdb	179	178	3.1319822e+00	9.0257954e-05	
n = 6	pdbAll	152	151	3.1451212e+00	5.6438171e-05	
m = 4	pdProj	16	11	3.1376879e+00	1.8596389e-05	
HS99	pdb	15	14	-8.3107989e+08	4.4125234e-05	
n = 7	pdbAll	15	14	-8.3107989e+08	4.2918167e-05	
m = 2	pdProj	5	4	-8.3107989e+08	6.3148384e-06	
HS99EXP	pdb	30	29	-1.2600063e+12	2.4463123e-05	
n = 31	pdbAll	23	22	-1.2600063e+12	4.7664362e-06	
m = 21	pdProj	25	21	-1.2600063e+12	9.9323439e-07	
HS100	pdb	16	11	6.8062994e+02	8.0564366e-07	
n = 7	pdbAll	15	10	6.8062965e+02	2.7239644e-06	
m = 4	pdProj	13	6	6.8062935e+02	3.5477198e-05	
HS100LNP	pdb	17	13	6.8063006e+02	2.4009021e-06	
n = 7	pdbAll	17	13	6.8063006e+02	2.4009021e-06	
m = 2	pdProj	17	13	6.8063006e+02	2.4009021e-06	
HS100MOD	pdb	12	9	6.7868025e+02	1.7071367e-07	
n = 7	pdbAll	12	9	6.7867964e+02	6.1770570e-08	
m = 4	pdProj	11	8	6.7867977e+02	8.7396904e-06	
HS101	pdb	--	--	2.2014637e+03	4.5635163e-01	itn
n = 7	pdbAll	--	--	2.2015933e+03	4.5654009e-01	itn
m = 5	pdProj	188	61	1.8059754e+03	5.8744692e-05	
HS102	pdb	--	--	2.2044973e+03	4.6014295e-01	itn
n = 7	pdbAll	--	--	2.2041917e+03	4.5962427e-01	itn
m = 5	pdProj	69	29	8.9110181e+02	7.3237062e-05	
HS103	pdb	--	--	2.2058283e+03	4.6003663e-01	itn
n = 7	pdbAll	--	--	2.2058269e+03	4.6003418e-01	itn
m = 5	pdProj	115	31	6.5995385e+02	9.6615356e-05	
HS104	pdb	12	11	3.9510499e+00	4.0161585e-05	
n = 8	pdbAll	11	10	3.9510852e+00	3.0590819e-05	
m = 5	pdProj	7	6	3.9511617e+00	1.1512450e-06	
HS105	pdb	36	35	1.0619215e+03	1.9460612e-07	
n = 8	pdbAll	45	44	1.0446117e+03	4.8803535e-06	
m = 1	pdProj	6	5	1.0618782e+03	1.6262117e-07	
HS106	pdb	--	--	1.3758094e+04	9.5536148e-04	near

Table 3: Results on 126 CUTEst HS problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 8	pdbAll	--	--	1.4068302e+04	9.7160660e-04	near
m = 6	pdProj	3	2	1.4999932e+04	1.4967388e-06	
HS107	pdb	40	39	5.0547378e+03	2.7442826e-05	
n = 9	pdbAll	39	38	5.0546108e+03	4.0245224e-05	
m = 6	pdProj	41	15	5.0540630e+03	9.6420127e-05	
HS108	pdb	41	40	-8.6603431e-01	2.1867787e-05	
n = 9	pdbAll	35	34	-8.6602557e-01	6.2475711e-06	
m = 13	pdProj	19	11	-5.0000055e-01	4.8237711e-06	
HS109	pdb	101	78	5.3620143e+03	4.6485213e-05	
n = 9	pdbAll	103	76	5.3620556e+03	1.2296550e-05	
m = 10	pdProj	88	27	5.3620642e+03	4.6117024e-06	
HS110	pdb	6	5	-4.5778475e+01	0.0000000e+00	
n = 10	pdbAll	6	5	-4.5778475e+01	0.0000000e+00	
m = 0	pdProj	5	4	-4.5778476e+01	0.0000000e+00	
HS111	pdb	16	15	-4.7762212e+01	5.0827244e-05	
n = 10	pdbAll	14	13	-4.7762081e+01	4.3864997e-05	
m = 3	pdProj	15	13	-4.7762068e+01	4.3220602e-05	
HS111LNP	pdb	13	11	-4.7762174e+01	4.9748553e-05	
n = 10	pdbAll	13	11	-4.7762174e+01	4.9748553e-05	
m = 3	pdProj	13	11	-4.7762174e+01	4.9748553e-05	
HS112	pdb	11	10	-4.7755735e+01	9.9492992e-05	
n = 10	pdbAll	11	10	-4.7757032e+01	3.0967105e-05	
m = 3	pdProj	10	8	-4.7757613e+01	7.9800251e-09	
HS113	pdb	14	13	2.4309112e+01	3.4891411e-05	
n = 10	pdbAll	14	13	2.4308781e+01	3.0208226e-05	
m = 8	pdProj	14	8	2.4313531e+01	9.9529802e-05	
HS114	pdb	253	83	-1.7683352e+03	3.2052526e-05	
n = 10	pdbAll	335	86	-1.7688080e+03	4.2244791e-05	
m = 11	pdProj	78	51	-1.7688100e+03	2.3510228e-06	
HS116	pdb	153	152	9.7516218e+01	8.6849456e-05	
n = 13	pdbAll	146	145	9.7518409e+01	4.7191434e-05	
m = 14	pdProj	49	10	2.1910440e+02	9.0076386e-05	
HS117	pdb	237	236	3.2350671e+01	5.8304267e-05	
n = 15	pdbAll	103	102	3.2348767e+01	4.2464400e-05	
m = 5	pdProj	25	13	3.2348713e+01	5.8147552e-05	
HS118	pdb	25	24	6.6482149e+02	8.9593810e-07	
n = 15	pdbAll	25	24	6.6482087e+02	5.2077725e-07	
m = 17	pdProj	25	11	6.6482045e+02	1.5720882e-09	
HS119	pdb	38	37	2.4495126e+02	8.5945525e-06	
n = 16	pdbAll	36	35	2.4494270e+02	7.4350625e-05	
m = 8	pdProj	14	12	2.4489812e+02	7.5916249e-05	
HS268	pdb	36	35	6.0789043e-05	3.8136469e-09	
n = 5	pdbAll	25	24	1.6713046e-03	1.3638308e-08	

m = 5	pdProj	7	6	3.6289130e-06	2.5928728e-10	

Table 4: Results on 139 CUTEst bound-constrained (BC) problems

Problem	Solver	Fe	Itn	Obj	Inf	Exit
3PK	pdb	17	16	1.7201613e+00	0.0000000e+00	
n = 30	pdbAll	16	15	1.7202541e+00	0.0000000e+00	
	pdProj	13	12	1.7202092e+00	0.0000000e+00	
AIRCRFTB	pdb	17	12	1.1709525e-14	0.0000000e+00	
n = 8	pdbAll	17	12	1.1709525e-14	0.0000000e+00	
	pdProj	17	12	1.1709525e-14	0.0000000e+00	
ALLINIT	pdb	24	23	1.6705968e+01	0.0000000e+00	
n = 4	pdbAll	21	20	1.6705968e+01	0.0000000e+00	
	pdProj	8	6	1.6705968e+01	0.0000000e+00	
BDEXP	pdb	14	13	3.2866900e-03	0.0000000e+00	
n = 500	pdbAll	12	11	3.8019815e-03	0.0000000e+00	
	pdProj	10	9	2.9719656e-03	0.0000000e+00	
BIGGS3	pdb	10	7	2.3390554e-09	0.0000000e+00	
n = 6	pdbAll	10	7	2.3390554e-09	0.0000000e+00	
	pdProj	10	7	2.3390554e-09	0.0000000e+00	
BIGGS5	pdb	32	20	6.4161833e-10	0.0000000e+00	
n = 6	pdbAll	32	20	6.4161833e-10	0.0000000e+00	
	pdProj	32	20	6.4161833e-10	0.0000000e+00	
BIGGSB1	pdb	142	141	1.5723032e-02	0.0000000e+00	
n = 25	pdbAll	138	137	1.6635594e-02	0.0000000e+00	
	pdProj	7	6	1.4999574e-02	2.2477640e-06	
BLEACHNG	pdb	18	17	-3.0326604e+04	0.0000000e+00	
n = 17	pdbAll	12	11	-3.0326604e+04	0.0000000e+00	
	pdProj	3	2	-3.0326604e+04	0.0000000e+00	
BOX2	pdb	6	5	8.4267573e-12	0.0000000e+00	
n = 3	pdbAll	6	5	8.4267573e-12	0.0000000e+00	
	pdProj	6	5	8.4267573e-12	0.0000000e+00	
BQP1VAR	pdb	8	7	8.4259105e-05	0.0000000e+00	
n = 1	pdbAll	8	7	3.4979727e-08	0.0000000e+00	
	pdProj	3	2	0.0000000e+00	0.0000000e+00	
BQPGABIM	pdb	7	6	-2.2715533e-05	0.0000000e+00	
n = 50	pdbAll	7	6	-2.4078760e-05	0.0000000e+00	
	pdProj	3	2	-1.7683826e-05	0.0000000e+00	
BQPGASIM	pdb	7	6	-3.9003199e-05	0.0000000e+00	
n = 50	pdbAll	7	6	-4.0446864e-05	0.0000000e+00	
	pdProj	3	2	-3.1846622e-05	0.0000000e+00	
BQPGAUSS	pdb	78	77	-3.5360559e-01	9.9797175e-05	
n = 2003	pdbAll	57	56	-3.5237706e-01	9.8952778e-05	
	pdProj	18	11	-3.6257591e-01	9.0525405e-06	
BRATU1D	pdb	4	3	-8.5166389e+00	0.0000000e+00	
n = 503	pdbAll	4	3	-8.5166389e+00	0.0000000e+00	
	pdProj	4	3	-8.5166389e+00	0.0000000e+00	

Table 4: Results on 139 CUTEst BC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
CAMEL6	pdb	13	12	-1.0316285e+00	0.0000000e+00	
n = 2	pdbAll	11	10	-1.0316285e+00	0.0000000e+00	
	pdProj	10	7	-2.1546383e-01	0.0000000e+00	
CHARDIS0	pdb	17	16	5.4013751e-13	0.0000000e+00	
n = 400	pdbAll	16	15	1.2502232e-12	0.0000000e+00	
	pdProj	6	5	1.2598151e-20	0.0000000e+00	
CHEBYQAD	pdb	55	53	8.7168543e-03	0.0000000e+00	
n = 100	pdbAll	48	47	8.7170700e-03	0.0000000e+00	
	pdProj	34	30	1.1964783e-02	0.0000000e+00	
CHENHARK	pdb	11	10	-1.9970422e+00	0.0000000e+00	
n = 100	pdbAll	11	10	-1.9990404e+00	0.0000000e+00	
	pdProj	26	23	-1.9994421e+00	9.1422380e-09	
CLPLATEA	pdb	6	5	-1.0973870e-02	0.0000000e+00	
n = 529	pdbAll	6	5	-1.0973870e-02	0.0000000e+00	
	pdProj	6	5	-1.0973870e-02	0.0000000e+00	
CLPLATEB	pdb	3	2	-5.4274570e-03	0.0000000e+00	
n = 529	pdbAll	3	2	-5.4274570e-03	0.0000000e+00	
	pdProj	3	2	-5.4274570e-03	0.0000000e+00	
CLPLATEC	pdb	2	1	-5.0590060e-03	0.0000000e+00	
n = 529	pdbAll	2	1	-5.0590060e-03	0.0000000e+00	
	pdProj	2	1	-5.0590060e-03	0.0000000e+00	
CVXBQP1	pdb	8	7	2.2935388e+02	0.0000000e+00	
n = 100	pdbAll	8	7	2.2807804e+02	0.0000000e+00	
	pdProj	6	5	2.2762781e+02	0.0000000e+00	
DECONVB	pdb	68	67	1.4371088e-07	0.0000000e+00	
n = 63	pdbAll	66	65	1.0175358e-07	0.0000000e+00	
	pdProj	18	15	2.3108424e-08	4.3198029e-08	
DEGDIAG	pdb	8	7	1.6678312e+02	0.0000000e+00	
n = 1001	pdbAll	8	7	1.6678340e+02	0.0000000e+00	
	pdProj	7	6	1.6666541e+02	0.0000000e+00	
DEGTRID	pdb	12	11	-9.9949998e+02	0.0000000e+00	
n = 1001	pdbAll	11	10	-9.9949998e+02	0.0000000e+00	
	pdProj	9	8	-9.9949996e+02	0.0000000e+00	
DEGTRID2	pdb	9	8	-9.9948431e+02	0.0000000e+00	
n = 1001	pdbAll	9	8	-9.9948412e+02	0.0000000e+00	
	pdProj	9	8	-9.9948412e+02	0.0000000e+00	
DRCAV1LQ	pdb	43	32	7.1154050e-12	0.0000000e+00	
n = 196	pdbAll	43	32	7.1154050e-12	0.0000000e+00	
	pdProj	43	32	7.1154050e-12	0.0000000e+00	
DRCAV2LQ	pdb	23	19	9.6618218e-03	0.0000000e+00	
n = 196	pdbAll	23	19	9.6618218e-03	0.0000000e+00	
	pdProj	23	19	9.6618218e-03	0.0000000e+00	
DRCAV3LQ	pdb	20	19	5.3603001e-10	0.0000000e+00	

Table 4: Results on 139 CUTEst BC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 196	pdbAll	20	19	5.3603001e-10	0.0000000e+00	
	pdProj	20	19	5.3603001e-10	0.0000000e+00	
EG1	pdb	23	22	-1.4292928e+00	0.0000000e+00	
n = 3	pdbAll	17	16	-1.4293040e+00	0.0000000e+00	
	pdProj	8	5	-1.1328010e+00	2.3066500e-07	
EXPLIN	pdb	172	171	-7.2355393e+05	0.0000000e+00	
n = 120	pdbAll	173	172	-7.2349389e+05	0.0000000e+00	
	pdProj	11	10	-7.2375627e+05	0.0000000e+00	
EXPLIN2	pdb	172	171	-7.2409098e+05	0.0000000e+00	
n = 120	pdbAll	172	171	-7.2434391e+05	0.0000000e+00	
	pdProj	26	11	-7.2445914e+05	1.9678241e-07	
EXPQUAD	pdb	75	74	-3.6259621e+06	0.0000000e+00	
n = 120	pdbAll	88	87	-3.6259621e+06	1.0148906e-08	
	pdProj	13	9	-3.6259621e+06	1.9798304e-13	
GRIDGENA	pdb	9	8	4.3200000e+03	0.0000000e+00	
n = 1226	pdbAll	8	7	4.3200000e+03	0.0000000e+00	
	pdProj	4	3	4.3200000e+03	0.0000000e+00	
HADAMALS	pdb	--	--	4.3753578e+03	2.5393764e-05	itn
n = 400	pdbAll	--	--	2.7532999e+03	4.9180564e-06	itn
	pdProj	107	90	1.5355190e+02	4.8302687e-06	
HARKERP2	pdb	31	30	7.1825620e+01	0.0000000e+00	
n = 500	pdbAll	27	26	3.2830263e+01	0.0000000e+00	
	pdProj	20	19	3.5314015e+01	0.0000000e+00	
HART6	pdb	11	10	-3.3228869e+00	0.0000000e+00	
n = 6	pdbAll	11	10	-3.3228869e+00	0.0000000e+00	
	pdProj	13	10	-3.3228869e+00	0.0000000e+00	
HATFLDA	pdb	20	19	6.3739125e-09	0.0000000e+00	
n = 4	pdbAll	17	16	7.4209628e-11	0.0000000e+00	
	pdProj	12	11	1.7920493e-11	0.0000000e+00	
HATFLDB	pdb	18	17	5.5764926e-03	0.0000000e+00	
n = 4	pdbAll	16	15	5.5731953e-03	0.0000000e+00	
	pdProj	8	7	5.5724276e-03	3.6016603e-06	
HATFLDC	pdb	7	6	9.8689762e-09	0.0000000e+00	
n = 25	pdbAll	7	6	1.3976355e-10	0.0000000e+00	
	pdProj	4	3	3.1461035e-08	0.0000000e+00	
HIMMELP1	pdb	32	31	-6.2053936e+01	0.0000000e+00	
n = 2	pdbAll	22	21	-6.2053936e+01	0.0000000e+00	
	pdProj	15	9	-6.2053936e+01	0.0000000e+00	
HOLMES	pdb	31	30	1.2481502e+03	3.4656703e-07	
n = 180	pdbAll	26	25	1.2481502e+03	4.4262822e-06	
	pdProj	360	47	1.2480716e+03	9.9999947e-05	
HS1	pdb	34	31	6.2221360e-12	0.0000000e+00	
n = 2	pdbAll	33	27	1.9841538e-14	0.0000000e+00	

Table 4: Results on 139 CUTEst BC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
	pdProj	33	25	2.5477836e-18	0.0000000e+00	
HS2	pdb	42	40	4.9412293e+00	1.6914131e-09	
n = 2	pdbAll	25	23	4.9412279e+00	3.0977011e-07	
	pdProj	55	9	4.9412283e+00	2.2164586e-07	
HS3	pdb	7	6	7.1039773e-09	0.0000000e+00	
n = 2	pdbAll	7	6	2.9103346e-08	0.0000000e+00	
	pdProj	2	1	9.9990001e-05	0.0000000e+00	
HS3MOD	pdb	7	6	2.7105054e-20	0.0000000e+00	
n = 2	pdbAll	7	6	2.2001000e-08	0.0000000e+00	
	pdProj	2	1	9.9990001e-05	0.0000000e+00	
HS4	pdb	6	5	2.6666669e+00	0.0000000e+00	
n = 2	pdbAll	6	5	2.6666670e+00	0.0000000e+00	
	pdProj	3	2	2.6671933e+00	0.0000000e+00	
HS5	pdb	9	8	-1.9132229e+00	0.0000000e+00	
n = 2	pdbAll	9	8	-1.9132230e+00	0.0000000e+00	
	pdProj	5	4	-1.9132230e+00	0.0000000e+00	
HS25	pdb	1	0	3.2835000e+01	0.0000000e+00	
n = 3	pdbAll	1	0	3.2835000e+01	0.0000000e+00	
	pdProj	1	0	3.2835000e+01	0.0000000e+00	
HS38	pdb	54	43	2.1261364e-11	0.0000000e+00	
n = 4	pdbAll	66	41	2.9682615e-18	0.0000000e+00	
	pdProj	56	39	4.7219124e-21	0.0000000e+00	
HS45	pdb	9	8	1.0003783e+00	4.9222080e-07	
n = 5	pdbAll	9	8	1.0003490e+00	4.6559949e-07	
	pdProj	4	3	9.9983459e-01	4.6294356e-05	
HS110	pdb	6	5	-4.5778475e+01	0.0000000e+00	
n = 10	pdbAll	6	5	-4.5778475e+01	0.0000000e+00	
	pdProj	5	4	-4.5778476e+01	0.0000000e+00	
JNLBRNG1	pdb	114	113	-1.7989277e-01	3.9609707e-12	
n = 529	pdbAll	118	117	-1.7985107e-01	4.2744474e-12	
	pdProj	8	7	-1.8004348e-01	1.0323478e-05	
JNLBRNG2	pdb	40	39	-4.1023449e+00	0.0000000e+00	
n = 529	pdbAll	38	37	-4.1023801e+00	0.0000000e+00	
	pdProj	6	5	-4.1023853e+00	5.4499336e-06	
JNLBRNGA	pdb	47	46	-3.0793090e-01	0.0000000e+00	
n = 529	pdbAll	47	46	-3.0795484e-01	0.0000000e+00	
	pdProj	8	7	-3.0795794e-01	2.1968064e-07	
JNLBRNGB	pdb	68	67	-6.5065208e+00	0.0000000e+00	
n = 529	pdbAll	65	64	-6.5066389e+00	0.0000000e+00	
	pdProj	5	4	-6.5067781e+00	1.7451801e-08	
KOEBHELB	pdb	108	83	7.7516347e+01	0.0000000e+00	
n = 3	pdbAll	125	88	7.7516347e+01	0.0000000e+00	
	pdProj	118	84	7.7516347e+01	0.0000000e+00	
LINVERSE	pdb	49	48	6.8000006e+01	0.0000000e+00	

Table 4: Results on 139 CUTEst BC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 199	pdbAll	48	47	6.8000005e+01	0.0000000e+00	
	pdProj	18	16	6.8000002e+01	0.0000000e+00	
LMINSURF	pdb	479	65	9.0000000e+00	0.0000000e+00	
n = 121	pdbAll	479	65	9.0000000e+00	0.0000000e+00	
	pdProj	447	61	9.0000000e+00	0.0000000e+00	
LOGROS	pdb	75	64	1.3988810e-14	0.0000000e+00	
n = 2	pdbAll	80	59	0.0000000e+00	0.0000000e+00	
	pdProj	51	40	2.6423308e-14	0.0000000e+00	
MAXLIKA	pdb	46	45	1.1493386e+03	0.0000000e+00	
n = 8	pdbAll	80	79	1.1493403e+03	0.0000000e+00	
	pdProj	9	8	1.1493471e+03	0.0000000e+00	
MCCORMCK	pdb	10	9	-4.5707717e+02	0.0000000e+00	
n = 500	pdbAll	10	9	-4.5707723e+02	0.0000000e+00	
	pdProj	6	5	-4.5707725e+02	0.0000000e+00	
MDHOLE	pdb	64	51	-3.3741599e-05	3.3741599e-05	
n = 2	pdbAll	62	48	2.6854932e-08	0.0000000e+00	
	pdProj	59	40	-1.1381967e-09	1.1381967e-09	
MINSURF	pdb	329	37	1.0000000e+00	0.0000000e+00	
n = 64	pdbAll	329	37	1.0000000e+00	0.0000000e+00	a
	pdProj	329	37	1.0000000e+00	0.0000000e+00	a
MINSURFO	pdb	8	7	2.5288994e+00	0.0000000e+00	
n = 731	pdbAll	7	6	2.5289193e+00	0.0000000e+00	
	pdProj	6	5	2.5288889e+00	1.7192533e-07	
NCVXBQP1	pdb	--	--	-1.6919930e+06	9.0907904e-05	itn
n = 100	pdbAll	--	--	-1.6991044e+06	9.0859104e-05	itn
	pdProj	20	16	-1.9955785e+06	1.4455956e-05	
NCVXBQP2	pdb	--	--	-1.1803254e+06	9.0909023e-05	itn
n = 100	pdbAll	--	--	-1.1653866e+06	9.0908344e-05	itn
	pdProj	24	23	-1.3330453e+06	7.2727273e-05	
NCVXBQP3	pdb	--	--	-6.2186045e+05	8.3926482e-05	itn
n = 100	pdbAll	--	--	-6.2471295e+05	9.0807556e-05	itn
	pdProj	38	34	-6.6013140e+05	1.9889295e-06	
NLMSURF	pdb	640	72	3.8571707e+01	0.0000000e+00	
n = 961	pdbAll	640	72	3.8571707e+01	0.0000000e+00	
	pdProj	640	72	3.8571707e+01	0.0000000e+00	
NOBNDTOR	pdb	61	60	-4.9802931e-01	0.0000000e+00	
n = 484	pdbAll	59	58	-4.9802569e-01	0.0000000e+00	
	pdProj	9	8	-4.9803397e-01	2.7939317e-07	
NONSCOMP	pdb	21	20	2.1087051e-04	0.0000000e+00	
n = 500	pdbAll	20	19	1.8539032e-04	0.0000000e+00	
	pdProj	13	12	2.7936007e-03	0.0000000e+00	
OBSTCLAE	pdb	15	14	1.6787823e+00	0.0000000e+00	
n = 529	pdbAll	15	14	1.6787312e+00	0.0000000e+00	

Table 4: Results on 139 CUTEst BC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
	pdProj	8	7	1.6780342e+00	5.6231836e-05	
OBSTCLAL	pdb	99	98	1.6780289e+00	0.0000000e+00	
n = 529	pdbAll	99	98	1.6780287e+00	0.0000000e+00	
	pdProj	9	8	1.6780272e+00	1.8175784e-07	
OBSTCLBL	pdb	265	264	6.5208405e+00	0.0000000e+00	
n = 529	pdbAll	264	263	6.5205538e+00	0.0000000e+00	
	pdProj	7	6	6.5193207e+00	9.0557497e-05	
OBSTCLBM	pdb	9	8	6.5306184e+00	0.0000000e+00	
n = 529	pdbAll	9	8	6.5277035e+00	0.0000000e+00	
	pdProj	4	3	6.5237471e+00	5.3253449e-05	
OBSTCLBU	pdb	242	241	6.5201066e+00	0.0000000e+00	
n = 529	pdbAll	242	241	6.5201046e+00	0.0000000e+00	
	pdProj	7	6	6.5193346e+00	3.7002914e-05	
ODC	pdb	9	8	-1.0980162e-02	0.0000000e+00	
n = 144	pdbAll	9	8	-1.0980162e-02	0.0000000e+00	
	pdProj	9	8	-1.0980162e-02	0.0000000e+00	
OSLBQP	pdb	10	9	6.2504067e+00	0.0000000e+00	
n = 8	pdbAll	9	8	6.2506234e+00	0.0000000e+00	
	pdProj	7	6	6.2502737e+00	0.0000000e+00	
PALMER1	pdb	31	28	1.1754603e+04	0.0000000e+00	
n = 4	pdbAll	28	25	1.1754603e+04	0.0000000e+00	
	pdProj	21	19	1.1754603e+04	0.0000000e+00	
PALMER1A	pdb	61	56	8.9883058e-02	0.0000000e+00	
n = 6	pdbAll	54	49	8.9883058e-02	0.0000000e+00	
	pdProj	60	49	8.9883058e-02	0.0000000e+00	
PALMER1B	pdb	27	26	3.4473495e+00	0.0000000e+00	
n = 4	pdbAll	26	25	3.4473495e+00	0.0000000e+00	
	pdProj	26	20	3.4473495e+00	0.0000000e+00	
PALMER1E	pdb	64	57	8.3523221e-04	0.0000000e+00	
n = 8	pdbAll	63	52	8.3523216e-04	0.0000000e+00	
	pdProj	68	53	8.3523553e-04	0.0000000e+00	
PALMER2	pdb	24	23	3.6510975e+03	0.0000000e+00	
n = 4	pdbAll	21	20	3.6510975e+03	0.0000000e+00	
	pdProj	59	46	3.6510975e+03	0.0000000e+00	
PALMER2A	pdb	94	78	1.7109717e-02	0.0000000e+00	
n = 6	pdbAll	97	74	1.7109717e-02	0.0000000e+00	
	pdProj	89	74	1.7109721e-02	0.0000000e+00	
PALMER2B	pdb	23	21	6.2326690e-01	0.0000000e+00	
n = 4	pdbAll	18	16	6.2326690e-01	0.0000000e+00	
	pdProj	11	10	6.2326690e-01	0.0000000e+00	
PALMER2E	pdb	78	64	2.0650359e-04	0.0000000e+00	
n = 8	pdbAll	78	60	2.0650351e-04	0.0000000e+00	
	pdProj	83	60	2.0650351e-04	0.0000000e+00	
PALMER3	pdb	19	18	2.2659582e+03	0.0000000e+00	

Table 4: Results on 139 CUTEst BC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 4	pdbAll	14	13	2.2659582e+03	0.0000000e+00	
	pdProj	45	43	2.2659582e+03	0.0000000e+00	
PALMER3A	pdb	103	86	2.0431500e-02	0.0000000e+00	
n = 6	pdbAll	103	80	2.0431866e-02	0.0000000e+00	
	pdProj	120	83	2.0434026e-02	0.0000000e+00	
PALMER3B	pdb	23	21	4.2276473e+00	0.0000000e+00	
n = 4	pdbAll	20	18	4.2276473e+00	0.0000000e+00	
	pdProj	25	15	4.2276473e+00	0.0000000e+00	
PALMER3E	pdb	60	51	5.0741166e-05	0.0000000e+00	
n = 8	pdbAll	66	49	5.0741120e-05	0.0000000e+00	
	pdProj	59	48	5.0741053e-05	0.0000000e+00	
PALMER4	pdb	26	24	2.2853832e+03	0.0000000e+00	
n = 4	pdbAll	18	16	2.2853832e+03	0.0000000e+00	
	pdProj	16	13	2.2853832e+03	0.0000000e+00	
PALMER4A	pdb	68	59	4.0606141e-02	0.0000000e+00	
n = 6	pdbAll	64	54	4.0606141e-02	0.0000000e+00	
	pdProj	60	49	4.0606141e-02	0.0000000e+00	
PALMER4B	pdb	21	20	6.8351386e+00	0.0000000e+00	
n = 4	pdbAll	15	14	6.8351386e+00	0.0000000e+00	
	pdProj	9	8	5.8960681e+02	3.2964190e-05	
PALMER4E	pdb	45	41	1.4800363e-04	0.0000000e+00	
n = 8	pdbAll	46	37	1.4800363e-04	0.0000000e+00	
	pdProj	46	37	1.4800348e-04	0.0000000e+00	
PALMER5A	pdb	--	--	8.4018217e-02	0.0000000e+00	itn
n = 8	pdbAll	--	--	8.6646664e-02	0.0000000e+00	itn
	pdProj	--	--	8.5340633e-02	0.0000000e+00	itn
PALMER5B	pdb	626	424	9.7524182e-03	0.0000000e+00	
n = 9	pdbAll	699	443	9.7524182e-03	0.0000000e+00	
	pdProj	107	78	1.5146565e-02	0.0000000e+00	
PALMER5D	pdb	2	1	8.7339395e+01	0.0000000e+00	
n = 4	pdbAll	2	1	8.7339395e+01	0.0000000e+00	
	pdProj	2	1	8.7339395e+01	0.0000000e+00	
PALMER5E	pdb	--	--	2.4790402e-02	0.0000000e+00	itn
n = 8	pdbAll	--	--	2.4805279e-02	0.0000000e+00	near
	pdProj	--	--	2.4740304e-02	0.0000000e+00	near
PALMER6A	pdb	139	120	5.5948854e-02	0.0000000e+00	
n = 6	pdbAll	144	118	5.5948854e-02	0.0000000e+00	
	pdProj	136	111	5.5948855e-02	0.0000000e+00	
PALMER6E	pdb	56	48	2.2395468e-04	0.0000000e+00	
n = 8	pdbAll	64	49	2.2395410e-04	0.0000000e+00	
	pdProj	57	43	2.2395472e-04	0.0000000e+00	
PALMER7A	pdb	--	--	1.0430151e+01	0.0000000e+00	itn
n = 6	pdbAll	--	--	1.0446250e+01	0.0000000e+00	itn

Table 4: Results on 139 CUTEst BC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
	pdProj	--	--	1.0458876e+01	0.0000000e+00	near
PALMER7E	pdb	241	176	1.0153899e+01	0.0000000e+00	
n = 8	pdbAll	236	166	1.0153899e+01	0.0000000e+00	
	pdProj	334	197	1.0153899e+01	0.0000000e+00	
PALMER8A	pdb	46	43	7.4009699e-02	0.0000000e+00	
n = 6	pdbAll	42	38	7.4009699e-02	0.0000000e+00	
	pdProj	44	32	7.4009699e-02	0.0000000e+00	
PALMER8E	pdb	30	29	6.3393063e-03	0.0000000e+00	
n = 8	pdbAll	27	25	6.3393062e-03	0.0000000e+00	
	pdProj	21	18	6.3393062e-03	0.0000000e+00	
PENTDI	pdb	20	19	-7.4995628e-01	2.4281657e-09	
n = 500	pdbAll	13	12	-7.4994721e-01	6.0757831e-09	
	pdProj	4	3	-7.5003281e-01	6.2336739e-05	
PFIT1LS	pdb	17	15	9.4656790e+02	0.0000000e+00	
n = 3	pdbAll	381	270	5.2741660e-12	0.0000000e+00	
	pdProj	357	252	1.8328370e-10	0.0000000e+00	
PFIT2LS	pdb	121	103	9.6092045e-14	0.0000000e+00	
n = 3	pdbAll	152	111	1.8853002e-13	0.0000000e+00	
	pdProj	172	118	3.9946336e-15	0.0000000e+00	
PFIT3LS	pdb	150	122	1.8542883e-14	0.0000000e+00	
n = 3	pdbAll	146	106	1.2163838e-10	0.0000000e+00	
	pdProj	159	113	4.6606625e-18	0.0000000e+00	
PFIT4LS	pdb	287	216	3.5276227e-14	0.0000000e+00	
n = 3	pdbAll	292	202	5.0804573e-21	0.0000000e+00	
	pdProj	294	204	4.3171360e-16	0.0000000e+00	
POWELLBC	pdb	--	--	1.4996258e+06	1.9971645e-03	itn
n = 1000	pdbAll	--	--	1.4533756e+06	3.3118159e-03	itn
	pdProj	--	--	3.1563925e+05	1.0000000e-07	itn
PROBPENL	pdb	14	13	3.9835673e-07	0.0000000e+00	
n = 500	pdbAll	14	13	3.9829409e-07	0.0000000e+00	
	pdProj	5	4	3.9907171e-07	0.0000000e+00	
PSPDOC	pdb	9	5	2.4142136e+00	5.5511151e-17	
n = 4	pdbAll	9	5	2.4142136e+00	0.0000000e+00	
	pdProj	9	5	2.4142136e+00	0.0000000e+00	
QR3DLS	pdb	274	192	8.3651935e-12	0.0000000e+00	
n = 610	pdbAll	308	204	6.4356682e-08	0.0000000e+00	
	pdProj	278	194	6.0178664e-16	0.0000000e+00	
QRTQUAD	pdb	74	73	-3.6246318e+06	0.0000000e+00	
n = 120	pdbAll	75	74	-3.6246319e+06	0.0000000e+00	
	pdProj	37	17	-3.6246319e+06	2.5337308e-13	
QUDLIN	pdb	169	168	-7.1987220e+05	0.0000000e+00	
n = 120	pdbAll	167	166	-7.1980709e+05	0.0000000e+00	
	pdProj	7	6	-7.1999751e+05	7.2727273e-06	
RAYBENDL	pdb	9	8	9.6245209e+01	0.0000000e+00	

Table 4: Results on 139 CUTEst BC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 130	pdbAll	9	8	9.6245209e+01	0.0000000e+00	
	pdProj	9	8	9.6245209e+01	0.0000000e+00	
RAYBENDS	pdb	9	8	9.6242362e+01	0.0000000e+00	
n = 130	pdbAll	9	8	9.6242362e+01	0.0000000e+00	
	pdProj	9	8	9.6242362e+01	0.0000000e+00	
S368	pdb	97	96	-1.2600003e+02	9.4695020e-07	
n = 100	pdbAll	76	75	-1.2599991e+02	0.0000000e+00	
	pdProj	22	21	-1.2318742e+02	0.0000000e+00	
SANTALS	pdb	29	26	1.2245719e-05	0.0000000e+00	
n = 21	pdbAll	27	24	1.2245834e-05	0.0000000e+00	
	pdProj	37	27	1.2290648e-05	0.0000000e+00	
SCOND1LS	pdb	489	395	1.1636876e-09	0.0000000e+00	
n = 502	pdbAll	451	375	1.5579222e-10	0.0000000e+00	
	pdProj	448	361	1.0421867e-09	0.0000000e+00	
SIM2BQP	pdb	23	22	4.6516865e-05	0.0000000e+00	
n = 2	pdbAll	15	14	2.7611289e-07	0.0000000e+00	
	pdProj	3	2	0.0000000e+00	0.0000000e+00	
SIMBQP	pdb	26	25	9.6424404e-06	0.0000000e+00	
n = 2	pdbAll	17	16	1.3322347e-07	0.0000000e+00	
	pdProj	5	4	-2.1649206e-07	2.1649215e-07	
SINEALI	pdb	26	24	-9.9009616e+03	0.0000000e+00	
n = 100	pdbAll	21	20	-9.9009616e+03	0.0000000e+00	
	pdProj	10	9	-9.9009616e+03	0.0000000e+00	
SPECAN	pdb	20	19	4.3121434e-12	0.0000000e+00	
n = 9	pdbAll	20	19	8.3218819e-13	0.0000000e+00	
	pdProj	12	9	1.6456672e-13	0.0000000e+00	
SSC	pdb	2	1	-2.0779891e+00	0.0000000e+00	
n = 1122	pdbAll	2	1	-2.0779891e+00	0.0000000e+00	
	pdProj	2	1	-2.0779891e+00	0.0000000e+00	
TORSION1	pdb	50	49	-4.5607134e-01	0.0000000e+00	
n = 484	pdbAll	49	48	-4.5606213e-01	0.0000000e+00	
	pdProj	9	8	-4.5608577e-01	2.7127951e-07	
TORSION2	pdb	10	9	-4.4963517e-01	0.0000000e+00	
n = 484	pdbAll	10	9	-4.4993295e-01	0.0000000e+00	
	pdProj	4	3	-4.5203677e-01	7.6363636e-05	
TORSION3	pdb	28	27	-1.2422167e+00	0.0000000e+00	
n = 484	pdbAll	25	24	-1.2422297e+00	0.0000000e+00	
	pdProj	6	5	-1.2422474e+00	2.4803621e-07	
TORSION4	pdb	10	9	-1.2355333e+00	0.0000000e+00	
n = 484	pdbAll	10	9	-1.2358168e+00	0.0000000e+00	
	pdProj	6	5	-1.2422440e+00	4.0708395e-05	
TORSION5	pdb	16	15	-2.8846678e+00	0.0000000e+00	
n = 484	pdbAll	14	13	-2.8846949e+00	0.0000000e+00	

Table 4: Results on 139 CUTEst BC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
	pdProj	4	3	-2.8846715e+00	2.7017566e-07	
TORSION6	pdb	10	9	-2.8795420e+00	0.0000000e+00	
n = 484	pdbAll	10	9	-2.8798354e+00	0.0000000e+00	
	pdProj	6	5	-2.8846941e+00	7.2579191e-08	
TORSIONA	pdb	50	49	-4.1608744e-01	0.0000000e+00	
n = 484	pdbAll	49	48	-4.1609117e-01	0.0000000e+00	
	pdProj	9	8	-4.1611070e-01	2.0972789e-07	
TORSIONB	pdb	9	8	-4.0913758e-01	0.0000000e+00	
n = 484	pdbAll	9	8	-4.1096631e-01	0.0000000e+00	
	pdProj	4	3	-4.1049415e-01	0.0000000e+00	
TORSIONC	pdb	28	27	-1.1994641e+00	0.0000000e+00	
n = 484	pdbAll	25	24	-1.1994627e+00	0.0000000e+00	
	pdProj	6	5	-1.1994840e+00	2.4806350e-07	
TORSIOND	pdb	10	9	-1.1949639e+00	0.0000000e+00	
n = 484	pdbAll	10	9	-1.1958401e+00	0.0000000e+00	
	pdProj	5	4	-1.1993013e+00	5.9442641e-05	
TORSIONE	pdb	16	15	-2.8405633e+00	0.0000000e+00	
n = 484	pdbAll	13	12	-2.8405031e+00	0.0000000e+00	
	pdProj	4	3	-2.8405584e+00	2.7741919e-07	
TORSIONF	pdb	10	9	-2.8362224e+00	0.0000000e+00	
n = 484	pdbAll	10	9	-2.8370834e+00	0.0000000e+00	
	pdProj	6	5	-2.8405853e+00	2.4708233e-07	
WEEDS	pdb	42	41	2.5872774e+00	0.0000000e+00	
n = 3	pdbAll	35	34	2.5872774e+00	0.0000000e+00	
	pdProj	50	45	2.5872774e+00	0.0000000e+00	
YFIT	pdb	70	61	6.9972759e-13	0.0000000e+00	
n = 3	pdbAll	66	57	4.3307538e-12	0.0000000e+00	
	pdProj	50	40	6.7347112e-13	0.0000000e+00	

Table 5: Results on 212 CUTEst linearly constrained (LC) problems

Problem	Solver	Fe	Itn	Obj	Inf	Exit
AGG	pdb	--	--	-8.1181823e+06	2.7863009e-01	itn
n = 163	pdbAll	--	--	-1.0290330e+07	2.7747486e-01	itn
m = 488	pdProj	1025	84	-3.5998047e+07	9.9159768e-05	
ANTWERP	pdb	91	90	3.2452427e+03	1.5311667e-10	
n = 27	pdbAll	67	64	3.2452409e+03	2.2490880e-12	
m = 10	pdProj	--	--	9.3458393e+03	9.9755765e-05	ls
AVGASA	pdb	40	39	-4.6319339e+00	2.8617445e-05	
n = 8	pdbAll	36	35	-4.6319039e+00	5.9584984e-05	
m = 10	pdProj	9	8	-4.6319255e+00	1.2861691e-09	
AVGASB	pdb	39	38	-4.4832567e+00	6.9947581e-05	
n = 8	pdbAll	34	33	-4.4832236e+00	2.7358568e-05	
m = 10	pdProj	9	8	-4.4832194e+00	2.8030285e-09	
AVION2	pdb	36	35	9.4680099e+07	5.3546789e-05	
n = 49	pdbAll	36	35	9.4680111e+07	3.1994669e-05	
m = 15	pdProj	29	24	9.4680756e+07	3.8087796e-05	
BIGGSC4	pdb	67	66	-2.4499837e+01	3.9370404e-06	
n = 4	pdbAll	66	65	-2.4499956e+01	1.0467829e-07	
m = 7	pdProj	16	12	-2.4500001e+01	1.5820949e-08	
BLOCKQP1	pdb	13	12	5.1084595e+00	8.8479017e-08	
n = 210	pdbAll	12	11	5.1047468e+00	1.1910428e-09	
m = 101	pdProj	10	9	5.1078761e+00	2.5314676e-10	
BLOCKQP2	pdb	26	25	-9.3807592e+01	2.3841096e-05	
n = 210	pdbAll	26	25	-9.3807515e+01	1.4355417e-05	
m = 101	pdProj	18	12	-9.3805674e+01	7.0849615e-06	
BLOCKQP3	pdb	15	14	5.2313884e+00	7.5687038e-08	
n = 210	pdbAll	13	12	5.2629463e+00	7.9451639e-08	
m = 101	pdProj	12	11	5.2322089e+00	7.8683323e-08	
BLOCKQP4	pdb	28	27	-4.5776521e+01	2.8027419e-05	
n = 210	pdbAll	28	27	-4.5776435e+01	1.8807906e-05	
m = 101	pdProj	27	17	-4.5776193e+01	4.7815373e-08	
BLOCKQP5	pdb	15	14	5.2359175e+00	7.5785262e-08	
n = 210	pdbAll	13	12	5.2706511e+00	7.9626786e-08	
m = 101	pdProj	12	11	5.2335481e+00	7.8719600e-08	
BLOWEYA	pdb	54	53	-4.5529182e-01	5.3925684e-05	
n = 202	pdbAll	49	48	-4.5272574e-01	9.5453623e-05	
m = 102	pdProj	16	14	-4.2913203e-01	8.5490403e-06	
BLOWEYB	pdb	41	40	-3.0244123e-01	6.1592023e-05	
n = 202	pdbAll	37	36	-3.0411333e-01	2.7208874e-05	
m = 102	pdProj	15	14	-2.8654303e-01	9.6684842e-06	
BLOWEYC	pdb	49	48	-3.0440815e-01	8.9799848e-05	
n = 202	pdbAll	47	46	-3.0518259e-01	2.8926478e-05	
m = 102	pdProj	16	12	-2.8049475e-01	3.2844610e-05	

Table 5: Results on 212 CUTEst LC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
BT3	pdb	3	2	4.0930208e+00	3.3088439e-07	
n = 5	pdbAll	3	2	4.0930208e+00	3.3088439e-07	
m = 3	pdProj	3	2	4.0930208e+00	3.3088439e-07	
CVXQP1	pdb	21	20	1.1590773e+04	7.2292248e-05	
n = 100	pdbAll	21	20	1.1590767e+04	6.1709293e-05	
m = 50	pdProj	10	9	1.1590729e+04	5.2263867e-05	
CVXQP2	pdb	13	12	8.1210072e+03	9.3521460e-05	
n = 100	pdbAll	13	12	8.1210062e+03	9.2712362e-05	
m = 25	pdProj	6	5	8.1209514e+03	5.2182132e-05	
CVXQP3	pdb	35	34	1.1943375e+04	5.2196436e-05	
n = 100	pdbAll	38	33	1.1943344e+04	9.1575107e-05	
m = 75	pdProj	38	35	1.1943407e+04	2.5479920e-05	
DALLASM	pdb	--	--	4.4239515e+07	1.1722202e+00	ls
n = 196	pdbAll	--	--	-4.5341225e+04	4.6234609e-08	itn
m = 151	pdProj	18	14	-4.8198127e+04	1.4696660e-05	
DALLASS	pdb	--	--	7.6755568e+06	3.6311653e-01	ls
n = 46	pdbAll	210	209	-3.2393093e+04	4.6174806e-09	
m = 31	pdProj	12	11	-3.2393217e+04	1.4818069e-05	
DEGENLPA	pdb	34	33	-8.7848047e-04	6.5564264e-05	
n = 20	pdbAll	33	32	-9.4295556e-04	2.4203662e-05	
m = 15	pdProj	5	4	-4.4970348e-04	7.2102491e-05	
DEGENLPB	pdb	88	87	-7.0792190e+01	7.2075724e-05	
n = 20	pdbAll	87	86	-7.0792181e+01	7.2103299e-05	
m = 15	pdProj	71	11	-7.0792061e+01	7.2249601e-05	
DEGENQP	pdb	57	56	1.4802733e-03	8.8813290e-08	
n = 10	pdbAll	54	53	1.6936583e-03	1.0265268e-07	
m = 1005	pdProj	9	5	0.0000000e+00	0.0000000e+00	
DEGENQPC	pdb	62	61	1.8286395e-03	1.0697330e-06	
n = 10	pdbAll	55	54	1.1074656e-03	4.6809264e-07	
m = 125	pdProj	14	9	-5.5697071e-06	1.3686047e-05	
DTOC1L	pdb	8	7	2.2994187e-01	8.7541859e-08	
n = 298	pdbAll	8	7	2.2994187e-01	8.7541859e-08	
m = 196	pdProj	8	7	2.2994187e-01	8.7541859e-08	
DTOC3	pdb	3	2	2.3426647e+02	1.6579996e-05	
n = 299	pdbAll	3	2	2.3426647e+02	1.6579996e-05	
m = 198	pdProj	3	2	2.3426647e+02	1.6579996e-05	
DUAL1	pdb	28	27	3.5011414e-02	4.0427632e-05	
n = 85	pdbAll	27	26	3.5012576e-02	9.2891587e-06	
m = 1	pdProj	7	6	3.5008579e-02	5.9866991e-05	
DUAL2	pdb	20	19	3.3732428e-02	3.4336177e-05	
n = 96	pdbAll	19	18	3.3733661e-02	3.2612464e-07	
m = 1	pdProj	6	5	3.3733592e-02	2.5279337e-06	
DUAL3	pdb	19	18	1.3575100e-01	3.2429850e-05	

Table 5: Results on 212 CUTEst LC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 111	pdbAll	18	17	1.3575576e-01	1.8408727e-06	
m = 1	pdProj	6	5	1.3575417e-01	9.4949704e-06	
DUAL4	pdb	18	17	7.4600779e-01	9.7869515e-05	
n = 75	pdbAll	17	16	7.4602497e-01	7.7324872e-05	
m = 1	pdProj	7	6	7.4609028e-01	6.5420370e-07	
DUALC1	pdb	49	48	5.4565120e+03	3.7010706e-05	
n = 9	pdbAll	48	47	5.7932358e+03	1.8428483e-05	
m = 215	pdProj	160	22	7.9853457e+03	9.9659932e-05	
DUALC2	pdb	74	73	3.4111091e+03	7.1901240e-05	
n = 7	pdbAll	65	64	3.4121327e+03	6.8231679e-05	
m = 229	pdProj	313	35	3.5410680e+03	4.4079079e-06	
DUALC5	pdb	49	48	4.5554968e+02	9.6302598e-05	
n = 8	pdbAll	54	53	4.4258221e+02	5.3747377e-05	
m = 278	pdProj	56	10	4.2899492e+02	7.9999972e-05	
DUALC8	pdb	82	81	1.3873308e+04	8.3002672e-05	
n = 8	pdbAll	80	79	1.4111889e+04	7.7492675e-05	
m = 503	pdProj	276	35	1.8581280e+04	4.0359617e-06	
EQC	pdb	1	0	-8.2789414e+02	0.0000000e+00	
n = 9	pdbAll	1	0	-8.2789414e+02	0.0000000e+00	
m = 3	pdProj	1	0	-8.2789414e+02	0.0000000e+00	
EXPFITA	pdb	31	30	1.1655321e-03	3.4161378e-09	
n = 5	pdbAll	22	21	1.1676369e-03	3.6264676e-09	
m = 22	pdProj	12	11	2.3068916e-03	8.0000000e-05	
EXPFITB	pdb	47	46	5.0188758e-03	6.6493862e-05	
n = 5	pdbAll	40	39	5.0513849e-03	1.6819715e-05	
m = 102	pdProj	134	99	5.0485155e-03	8.0000000e-05	
EXPFITC	pdb	59	58	2.3300540e-02	6.0900240e-05	
n = 5	pdbAll	59	58	2.3299430e-02	9.4559301e-05	
m = 502	pdProj	--	--	3.2006691e+07	1.1215459e-04	near
EXTRASIM	pdb	2	1	1.0000000e+00	0.0000000e+00	
n = 2	pdbAll	2	1	1.0000000e+00	0.0000000e+00	
m = 1	pdProj	2	1	1.0000000e+00	0.0000000e+00	
FCCU	pdb	15	14	1.1149059e+01	2.8525186e-05	
n = 19	pdbAll	14	13	1.1149063e+01	2.6438418e-05	
m = 8	pdProj	5	4	1.1149109e+01	3.1256057e-08	
FERRISDC	pdb	1	0	0.0000000e+00	0.0000000e+00	
n = 44	pdbAll	1	0	0.0000000e+00	0.0000000e+00	
m = 14	pdProj	1	0	0.0000000e+00	0.0000000e+00	
GENHS28	pdb	3	2	9.2717369e-01	3.7952124e-09	
n = 10	pdbAll	3	2	9.2717369e-01	3.7952124e-09	
m = 8	pdProj	3	2	9.2717369e-01	3.7952124e-09	
GMNCASE1	pdb	9	8	2.6517218e-01	5.5868317e-05	
n = 175	pdbAll	9	8	2.6557244e-01	4.5250168e-05	

Table 5: Results on 212 CUTEst LC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 300	pdProj	34	33	2.6697317e-01	5.0537303e-05	
GMNCASE2	pdb	10	9	-9.9405310e-01	8.9283474e-06	
n = 175	pdbAll	10	9	-9.9403049e-01	2.3224118e-05	
m = 1050	pdProj	6	5	-9.9432951e-01	6.7340113e-05	
GMNCASE3	pdb	11	10	1.5196965e+00	3.4062640e-05	
n = 175	pdbAll	11	10	1.5209782e+00	2.5874782e-05	
m = 1050	pdProj	6	5	1.5251594e+00	5.6223121e-05	
GMNCASE4	pdb	314	313	5.9468842e+03	1.0831363e-07	
n = 175	pdbAll	287	286	5.9468838e+03	1.7369060e-07	
m = 350	pdProj	6	5	5.9468700e+03	2.9146116e-05	
GOFFIN	pdb	9	8	8.6064135e-02	4.7336381e-06	
n = 51	pdbAll	9	8	8.6022217e-02	4.5410044e-06	
m = 50	pdProj	18	10	-5.4471448e-10	5.7782882e-10	
GOULDQP1	pdb	118	117	-3.4852452e+03	1.1296668e-08	
n = 32	pdbAll	103	102	-3.4852046e+03	2.1820233e-08	
m = 17	pdProj	26	15	-3.4853331e+03	2.1382243e-07	
GRIDNETA	pdb	108	107	9.5241412e+01	4.8300552e-05	
n = 180	pdbAll	108	107	9.5241197e+01	6.2136912e-05	
m = 100	pdProj	10	9	9.5242509e+01	4.6119068e-05	
GRIDNETB	pdb	3	2	4.7268227e+01	2.6502649e-07	
n = 180	pdbAll	3	2	4.7268227e+01	2.6502649e-07	
m = 100	pdProj	3	2	4.7268227e+01	2.6502649e-07	
GRIDNETC	pdb	135	134	4.8352019e+01	3.4406346e-05	
n = 180	pdbAll	127	126	4.8352348e+01	5.2644670e-07	
m = 100	pdProj	7	6	4.8352350e+01	2.5904793e-05	
GRIDNETD	pdb	110	109	9.9247331e+01	3.1266136e-05	
n = 180	pdbAll	110	109	9.9247342e+01	3.0567237e-05	
m = 100	pdProj	10	9	9.9248088e+01	3.2293734e-05	
GRIDNETE	pdb	3	2	5.0601275e+01	2.3243172e-05	
n = 180	pdbAll	3	2	5.0601275e+01	2.3243172e-05	
m = 100	pdProj	3	2	5.0601275e+01	2.3243172e-05	
GRIDNETF	pdb	153	152	5.1647100e+01	8.6485249e-05	
n = 180	pdbAll	148	147	5.1647950e+01	3.6909265e-05	
m = 100	pdProj	7	6	5.1647939e+01	3.6082158e-05	
GRIDNETG	pdb	84	83	7.3448626e+01	5.9686700e-05	
n = 60	pdbAll	84	83	7.3448921e+01	3.1571341e-05	
m = 36	pdProj	8	7	7.3449244e+01	7.1801052e-07	
GRIDNETH	pdb	3	2	3.9609938e+01	1.7641530e-05	
n = 60	pdbAll	3	2	3.9609938e+01	1.7641530e-05	
m = 36	pdProj	3	2	3.9609938e+01	1.7641530e-05	
GRIDNETI	pdb	95	94	4.0222816e+01	6.2392180e-05	
n = 60	pdbAll	85	84	4.0223303e+01	2.4450387e-06	
m = 36	pdProj	6	5	4.0223310e+01	2.9215901e-06	
HAGER1	pdb	2	1	8.8079749e-01	1.7528322e-06	

Table 5: Results on 212 CUTEst LC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 201	pdbAll	2	1	8.8079749e-01	1.7528322e-06	
m = 100	pdProj	2	1	8.8079749e-01	1.7528322e-06	
HAGER2	pdb	2	1	4.3208693e-01	8.5705171e-07	
n = 201	pdbAll	2	1	4.3208693e-01	8.5705171e-07	
m = 100	pdProj	2	1	4.3208693e-01	8.5705171e-07	
HAGER3	pdb	2	1	1.4096195e-01	2.8020779e-07	
n = 201	pdbAll	2	1	1.4096195e-01	2.8020779e-07	
m = 100	pdProj	2	1	1.4096195e-01	2.8020779e-07	
HAGER4	pdb	11	10	2.7969265e+00	2.6160914e-05	
n = 201	pdbAll	9	8	2.7981792e+00	9.2108414e-05	
m = 100	pdProj	2	1	3.5427938e+00	2.6554675e-06	
HATFLDH	pdb	36	35	-2.4499987e+01	2.5342367e-05	
n = 4	pdbAll	33	32	-2.4499964e+01	7.1314578e-05	
m = 7	pdProj	18	7	-2.4499627e+01	6.8619650e-06	
HIE1372D	pdb	--	--	2.4858316e+02	3.0359540e+01	ls
n = 637	pdbAll	109	108	2.7798711e+02	7.2960545e-06	
m = 525	pdProj	6	5	2.7798712e+02	5.9799479e-06	
HIMMELBI	pdb	--	--	-1.5921235e+03	4.1519242e-02	itn
n = 100	pdbAll	--	--	-1.7052529e+03	8.9184083e-07	itn
m = 12	pdProj	117	30	-1.7355696e+03	2.2349607e-06	
HIMMELBJ	pdb	63	41	-1.9103443e+03	7.2466876e-06	
n = 45	pdbAll	67	43	-1.9103446e+03	4.6914126e-07	
m = 14	pdProj	--	--	--	9.6508640e+01	ls
HONG	pdb	11	10	2.2570194e+01	2.0479890e-05	
n = 4	pdbAll	11	10	2.2570205e+01	2.0235233e-05	
m = 1	pdProj	7	6	2.2570957e+01	2.9846741e-06	
HS9	pdb	6	5	-5.0000000e-01	0.0000000e+00	
n = 2	pdbAll	6	5	-5.0000000e-01	0.0000000e+00	
m = 1	pdProj	6	5	-5.0000000e-01	0.0000000e+00	
HS21	pdb	17	16	-9.9960000e+01	4.5408250e-06	
n = 2	pdbAll	17	16	-9.9960000e+01	2.3571633e-06	
m = 1	pdProj	4	3	-9.9960004e+01	7.8204606e-05	
HS21MOD	pdb	17	16	-9.5960000e+01	4.5408250e-06	
n = 7	pdbAll	17	16	-9.5960000e+01	2.3571633e-06	
m = 1	pdProj	4	3	-9.5960004e+01	7.8204606e-05	
HS24	pdb	16	15	-9.9999996e-01	1.3738485e-08	
n = 2	pdbAll	13	12	-1.0000087e+00	2.0044254e-05	
m = 3	pdProj	9	8	-1.0000001e+00	7.6511127e-08	
HS268	pdb	36	35	6.0789043e-05	3.8136469e-09	
n = 5	pdbAll	25	24	1.6713046e-03	1.3638308e-08	
m = 5	pdProj	7	6	3.6289130e-06	2.5928728e-10	
HS28	pdb	2	1	0.0000000e+00	0.0000000e+00	
n = 3	pdbAll	2	1	0.0000000e+00	0.0000000e+00	

Table 5: Results on 212 CUTEst LC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 1	pdProj	2	1	0.0000000e+00	0.0000000e+00	
HS35	pdb	10	9	1.1128385e-01	2.6997606e-07	
n = 3	pdbAll	10	9	1.1122245e-01	1.9646960e-07	
m = 1	pdProj	6	5	1.1111140e-01	1.9632392e-08	
HS35I	pdb	10	9	1.1124662e-01	2.5039471e-07	
n = 3	pdbAll	10	9	1.1119507e-01	1.7661377e-07	
m = 1	pdProj	6	5	1.1111166e-01	2.8988885e-08	
HS35MOD	pdb	12	11	2.5008190e-01	8.1283831e-07	
n = 3	pdbAll	11	10	2.5008352e-01	8.1008286e-07	
m = 1	pdProj	8	7	2.5002677e-01	4.5570724e-07	
HS36	pdb	14	13	-3.2992995e+03	9.9277068e-05	
n = 3	pdbAll	14	13	-3.2993519e+03	9.3589589e-05	
m = 1	pdProj	9	8	-8.9987954e-12	3.7419934e-08	
HS37	pdb	17	16	-3.4560075e+03	7.2043026e-07	
n = 3	pdbAll	17	16	-3.4560057e+03	5.4963245e-07	
m = 2	pdProj	7	6	-3.4559843e+03	1.4991053e-06	
HS41	pdb	30	29	1.9259186e+00	6.7230663e-05	
n = 4	pdbAll	24	23	1.9259177e+00	7.6914045e-05	
m = 1	pdProj	5	4	1.9259230e+00	8.1753753e-06	
HS44	pdb	44	43	-1.3000012e+01	7.8580974e-07	
n = 4	pdbAll	40	39	-1.3000001e+01	1.1303452e-07	
m = 6	pdProj	10	9	-1.4999933e+01	8.5574672e-07	
HS44NEW	pdb	15	14	-1.4999992e+01	6.2174109e-08	
n = 4	pdbAll	14	13	-1.4999975e+01	1.6990228e-07	
m = 6	pdProj	16	7	-1.5000000e+01	3.6778289e-11	
HS48	pdb	2	1	0.0000000e+00	0.0000000e+00	
n = 5	pdbAll	2	1	0.0000000e+00	0.0000000e+00	
m = 2	pdProj	2	1	0.0000000e+00	0.0000000e+00	
HS49	pdb	12	11	4.5732460e-06	4.4408921e-16	
n = 5	pdbAll	12	11	4.5732460e-06	4.4408921e-16	
m = 2	pdProj	12	11	4.5732460e-06	4.4408921e-16	
HS50	pdb	9	8	8.4129508e-13	7.3360713e-07	
n = 5	pdbAll	9	8	8.4129508e-13	7.3360713e-07	
m = 3	pdProj	9	8	8.4129508e-13	7.3360713e-07	
HS51	pdb	2	1	0.0000000e+00	0.0000000e+00	
n = 5	pdbAll	2	1	0.0000000e+00	0.0000000e+00	
m = 3	pdProj	2	1	0.0000000e+00	0.0000000e+00	
HS52	pdb	3	2	5.3266416e+00	5.8404263e-07	
n = 5	pdbAll	3	2	5.3266416e+00	5.8404263e-07	
m = 3	pdProj	3	2	5.3266416e+00	5.8404263e-07	
HS53	pdb	9	8	4.0928843e+00	6.7755640e-05	
n = 5	pdbAll	9	8	4.0930232e+00	2.3335990e-09	
m = 3	pdProj	4	3	4.0930243e+00	1.5198175e-07	
HS54	pdb	18	17	-8.6731969e-01	7.0888294e-05	

Table 5: Results on 212 CUTEst LC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 6	pdbAll	8	7	-1.5502868e-01	2.0008883e-11	
m = 1	pdProj	3	2	-1.5396022e-01	3.4664481e-08	
HS55	pdb	24	23	6.6666518e+00	2.2387171e-05	
n = 6	pdbAll	22	21	6.6666655e+00	1.7523836e-06	
m = 6	pdProj	5	4	6.6666901e+00	3.7988759e-05	
HS62	pdb	18	17	-2.6272963e+04	7.0232571e-05	
n = 3	pdbAll	17	16	-2.6272973e+04	7.1819801e-05	
m = 1	pdProj	12	11	-2.6272929e+04	6.4848312e-05	
HS76	pdb	10	9	-4.6812405e+00	2.5377996e-07	
n = 4	pdbAll	10	9	-4.6813853e+00	2.0302763e-07	
m = 3	pdProj	6	5	-4.6818182e+00	6.0918031e-05	
HS76I	pdb	10	9	-4.6812505e+00	2.7534665e-07	
n = 4	pdbAll	10	9	-4.6813485e+00	2.3800974e-07	
m = 3	pdProj	6	5	-4.6818182e+00	6.0976537e-05	
HS86	pdb	82	81	-3.2348667e+01	2.0201298e-05	
n = 5	pdbAll	72	71	-3.2348677e+01	1.9567655e-05	
m = 10	pdProj	11	7	-3.2349049e+01	5.9625272e-05	
HS105	pdb	36	35	1.0619215e+03	1.9460612e-07	
n = 8	pdbAll	45	44	1.0446117e+03	4.8803535e-06	
m = 1	pdProj	6	5	1.0618782e+03	1.6262117e-07	
HS112	pdb	11	10	-4.7755735e+01	9.9492992e-05	
n = 10	pdbAll	11	10	-4.7757032e+01	3.0967105e-05	
m = 3	pdProj	10	8	-4.7757613e+01	7.9800251e-09	
HS118	pdb	25	24	6.6482149e+02	8.9593810e-07	
n = 15	pdbAll	25	24	6.6482087e+02	5.2077725e-07	
m = 17	pdProj	25	11	6.6482045e+02	1.5720882e-09	
HS119	pdb	38	37	2.4495126e+02	8.5945525e-06	
n = 16	pdbAll	36	35	2.4494270e+02	7.4350625e-05	
m = 8	pdProj	14	12	2.4489812e+02	7.5916249e-05	
HUBFIT	pdb	22	21	1.6988859e-02	3.9558278e-07	
n = 2	pdbAll	15	14	1.6914083e-02	1.5021423e-07	
m = 1	pdProj	6	5	1.6892489e-02	7.4278318e-06	
HUES-MOD	pdb	57	56	3.4829821e+07	6.8162982e-05	
n = 100	pdbAll	52	51	3.4829825e+07	5.7173246e-06	
m = 2	pdProj	13	11	3.4829821e+07	1.8702377e-05	
HUESTIS	pdb	73	72	3.4829823e+09	2.6248499e-05	
n = 100	pdbAll	68	67	3.4829824e+09	1.1620892e-06	
m = 2	pdProj	15	14	3.4829820e+09	2.9485583e-05	
HYDROELM	pdb	--	--	-3.4491150e+06	1.9427045e-08	itn
n = 505	pdbAll	--	--	-3.4492227e+06	5.4549570e-07	itn
m = 504	pdProj	--	--	-3.5006952e+06	3.1527021e-06	itn
HYDROELS	pdb	--	--	-3.4832163e+06	4.1981041e-07	itn
n = 169	pdbAll	--	--	-3.4832242e+06	5.2146582e-07	itn

Table 5: Results on 212 CUTEst LC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 168	pdProj	--	--	-3.5645582e+06	3.2622294e-01	ls
KSIP	pdb	6	5	2.5457988e+00	9.2173664e-09	
n = 20	pdbAll	6	5	2.6690089e+00	8.5754293e-09	
m = 1001	pdProj	3	2	4.4826266e+00	7.7052117e-09	
LCH	pdb	17	16	-4.2581443e+00	9.0663189e-08	
n = 300	pdbAll	17	16	-4.2581443e+00	9.0663189e-08	
m = 1	pdProj	17	16	-4.2581443e+00	9.0663189e-08	
LIN	pdb	26	25	-1.9606276e-02	1.2598327e-08	
n = 4	pdbAll	21	20	-1.9606277e-02	1.3668763e-08	
m = 2	pdProj	16	15	-1.9606281e-02	5.6609067e-09	
LINSPANH	pdb	1	0	-7.7000000e+01	2.2737368e-13	
n = 97	pdbAll	1	0	-7.7000000e+01	2.2737368e-13	
m = 33	pdProj	1	0	-7.7000000e+01	2.2737368e-13	
LISWET1	pdb	26	25	1.0039003e+00	2.7462967e-05	
n = 403	pdbAll	22	21	1.0035807e+00	2.9902940e-05	
m = 400	pdProj	14	12	9.9890401e-01	5.0693286e-05	
LISWET2	pdb	26	25	1.0048551e+00	2.7462787e-05	
n = 403	pdbAll	22	21	1.0046033e+00	2.9903966e-05	
m = 400	pdProj	14	12	1.0018523e+00	5.0588613e-05	
LISWET3	pdb	26	25	1.0035763e+00	2.7462787e-05	
n = 403	pdbAll	22	21	1.0033942e+00	2.9903965e-05	
m = 400	pdProj	14	12	1.0018522e+00	5.0588450e-05	
LISWET4	pdb	26	25	1.0030244e+00	2.7465475e-05	
n = 403	pdbAll	22	21	1.0028724e+00	2.9888743e-05	
m = 400	pdProj	14	12	1.0018455e+00	5.2138963e-05	
LISWET5	pdb	31	30	1.0019069e+00	1.6535151e-05	
n = 403	pdbAll	26	25	1.0019207e+00	1.6526824e-05	
m = 400	pdProj	14	12	1.0018497e+00	5.1231413e-05	
LISWET6	pdb	30	29	1.0018918e+00	1.6642479e-05	
n = 403	pdbAll	26	25	1.0019218e+00	1.6549235e-05	
m = 400	pdProj	14	12	1.0018528e+00	5.0494605e-05	
LISWET7	pdb	26	25	1.0064153e+00	2.7473701e-05	
n = 403	pdbAll	22	21	1.0060794e+00	2.9825160e-05	
m = 400	pdProj	15	12	1.0017723e+00	6.3236461e-05	
LISWET8	pdb	26	25	1.0067087e+00	2.6841099e-05	
n = 403	pdbAll	22	21	1.0063903e+00	3.0454514e-05	
m = 400	pdProj	14	12	1.0020484e+00	3.1546053e-05	
LISWET9	pdb	173	172	1.9571497e+01	7.2673374e-05	
n = 102	pdbAll	143	142	1.9576603e+01	7.1572052e-05	
m = 100	pdProj	175	66	1.9798690e+01	7.4862836e-05	
LISWET10	pdb	30	29	1.0018906e+00	1.6604494e-05	
n = 403	pdbAll	26	25	1.0019206e+00	1.6511101e-05	
m = 400	pdProj	14	12	1.0018476e+00	5.1902620e-05	
LISWET11	pdb	30	29	1.0018918e+00	1.7196545e-05	

Table 5: Results on 212 CUTEst LC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 403	pdbAll	26	25	1.0019218e+00	1.7105676e-05	
m = 400	pdProj	14	12	1.0018797e+00	3.9470607e-05	
LISWET12	pdb	29	28	1.0018778e+00	2.6540499e-05	
n = 403	pdbAll	25	24	1.0052290e+00	3.0777220e-05	
m = 400	pdProj	12	10	1.0013570e+00	6.2125779e-05	
LOADBAL	pdb	46	45	4.9577422e-01	7.5504534e-11	
n = 31	pdbAll	29	28	5.1253500e-01	6.2825154e-11	
m = 31	pdProj	9	6	4.9651409e-01	8.0000000e-05	
LOTSCHD	pdb	34	33	2.3984136e+03	5.9159668e-05	
n = 12	pdbAll	24	23	2.3984158e+03	2.0675740e-08	
m = 7	pdProj	8	7	2.3984154e+03	8.5737666e-06	
LSNNODOC	pdb	34	33	1.2311706e+02	6.5916609e-07	
n = 5	pdbAll	30	29	1.2311876e+02	8.7222405e-07	
m = 4	pdProj	8	7	1.2311244e+02	5.7587828e-07	
LSQFIT	pdb	23	22	3.3808827e-02	1.2899025e-07	
n = 2	pdbAll	15	14	3.3808216e-02	1.8885379e-07	
m = 1	pdProj	6	5	3.3787710e-02	8.1808281e-08	
MAKELA4	pdb	13	12	8.2620369e-04	2.8400288e-09	
n = 21	pdbAll	13	12	7.8596880e-04	1.6979892e-05	
m = 40	pdProj	5	4	3.9350114e-05	5.7345447e-05	
MODEL	pdb	48	47	0.0000000e+00	8.3490050e-05	
n = 1542	pdbAll	37	36	0.0000000e+00	4.0481175e-07	
m = 38	pdProj	9	7	0.0000000e+00	5.4866209e-05	
MOSARQP1	pdb	11	10	-1.5413919e+02	2.6457045e-07	
n = 100	pdbAll	11	10	-1.5417401e+02	1.9641353e-07	
m = 10	pdProj	6	5	-1.5420010e+02	3.4953250e-07	
MOSARQP2	pdb	11	10	-2.0650020e+02	8.6446138e-08	
n = 100	pdbAll	10	9	-2.0647305e+02	2.0223886e-07	
m = 10	pdProj	4	3	-2.0648421e+02	7.4935269e-05	
NASH	pdb	19	18	0.0000000e+00	8.8128746e+00	stny
n = 72	pdbAll	9	8	0.0000000e+00	8.8128746e+00	stny
m = 24	pdProj	5	4	0.0000000e+00	8.8128746e+00	stny
NCVXQP1	pdb	--	--	-6.9370002e+05	2.3316601e-04	itn
n = 100	pdbAll	487	486	-7.2975422e+05	1.2249531e-05	
m = 50	pdProj	59	25	-7.2975372e+05	1.2688802e-06	
NCVXQP2	pdb	--	--	-5.3259740e+05	2.3520352e-04	itn
n = 100	pdbAll	--	--	-5.4018768e+05	9.0899227e-05	itn
m = 50	pdProj	34	27	-5.4468227e+05	1.7020233e-05	
NCVXQP3	pdb	--	--	-2.8874353e+05	5.4296204e-04	itn
n = 100	pdbAll	418	417	-2.9006039e+05	2.7578565e-05	
m = 50	pdProj	76	39	-2.8981959e+05	2.3316743e-07	
NCVXQP4	pdb	--	--	-8.5816331e+05	6.9985651e-04	itn
n = 100	pdbAll	--	--	-8.9281974e+05	7.6343517e-04	itn

Table 5: Results on 212 CUTEst LC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 25	pdProj	94	41	-9.2153578e+05	1.1666946e-07	
NCVXQP5	pdb	--	--	-5.9470727e+05	9.8852144e-04	itn
n = 100	pdbAll	--	--	-6.1214666e+05	8.1444724e-04	itn
m = 25	pdProj	73	29	-6.3476366e+05	4.8082438e-05	
NCVXQP6	pdb	--	--	-3.1846142e+05	1.0460868e-03	itn
n = 100	pdbAll	480	475	-3.3289056e+05	1.8243602e-05	
m = 25	pdProj	47	42	-3.3289050e+05	3.6997615e-05	
NCVXQP7	pdb	343	335	-4.9111382e+05	9.2148108e-05	
n = 100	pdbAll	280	279	-4.9111510e+05	8.2507818e-05	
m = 75	pdProj	42	22	-4.9111149e+05	4.4242893e-06	
NCVXQP8	pdb	461	460	-3.4298514e+05	3.6122746e-05	
n = 100	pdbAll	353	352	-3.4298510e+05	3.7243163e-05	
m = 75	pdProj	45	25	-3.4298270e+05	1.5348789e-05	
NCVXQP9	pdb	384	373	-2.1120705e+05	9.0908573e-05	
n = 100	pdbAll	341	340	-2.1120730e+05	8.3303992e-05	
m = 75	pdProj	31	22	-2.1120630e+05	1.3676205e-05	
ODFITS	pdb	21	20	-2.3800268e+03	3.8850060e-05	
n = 10	pdbAll	19	18	-2.3800268e+03	3.2926565e-05	
m = 6	pdProj	8	7	-2.3800268e+03	6.8800830e-08	
OET1	pdb	299	298	5.3818699e-01	2.8236688e-05	
n = 3	pdbAll	280	279	5.3818892e-01	2.8709454e-05	
m = 202	pdProj	--	--	5.4996874e-01	1.5439332e-03	itn
OET3	pdb	34	33	4.4821705e-03	3.4527035e-05	
n = 4	pdbAll	32	31	4.4626218e-03	8.8028910e-05	
m = 202	pdProj	19	18	4.4969656e-03	1.5379179e-05	
PDE1	pdb	34	33	1.1015570e+00	8.2056813e-06	
n = 26	pdbAll	32	31	1.1015484e+00	2.3559550e-05	
m = 51	pdProj	8	7	1.1015623e+00	7.4521980e-05	
PDE2	pdb	24	23	9.0540568e+00	8.9295603e-05	
n = 40	pdbAll	22	21	9.0546888e+00	3.7854520e-08	
m = 51	pdProj	6	5	9.0546859e+00	2.5404820e-05	
PENTAGON	pdb	16	15	1.4654527e-04	2.9778252e-06	
n = 6	pdbAll	10	9	1.5527324e-04	4.7369142e-05	
m = 15	pdProj	10	8	1.4715564e-04	4.6861073e-05	
PORTFL1	pdb	10	9	2.0631533e-02	1.2992821e-07	
n = 12	pdbAll	10	9	2.0540902e-02	6.2467985e-08	
m = 1	pdProj	8	5	2.0517372e-02	1.5881836e-06	
PORTFL2	pdb	10	9	2.9863185e-02	9.4085704e-08	
n = 12	pdbAll	9	8	2.9852044e-02	9.3589327e-08	
m = 1	pdProj	12	6	2.9713898e-02	1.3327604e-06	
PORTFL3	pdb	11	10	3.2791232e-02	4.9373012e-08	
n = 12	pdbAll	10	9	3.2789191e-02	4.8919512e-08	
m = 1	pdProj	14	6	3.2767460e-02	1.2510046e-06	
PORTFL4	pdb	10	9	2.6415537e-02	9.0409526e-08	

Table 5: Results on 212 CUTEst LC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 12	pdbAll	9	8	2.6441432e-02	1.0869945e-07	
m = 1	pdProj	8	5	2.6313610e-02	8.5379296e-08	
PORTFL6	pdb	10	9	2.5881944e-02	9.0564020e-08	
n = 12	pdbAll	9	8	2.5873414e-02	8.9554644e-08	
m = 1	pdProj	8	5	2.5803396e-02	1.8390136e-07	
PORTSNQP	pdb	22	21	3.3177845e+02	3.5812202e-05	
n = 1000	pdbAll	13	12	3.3186369e+02	2.5587545e-06	
m = 2	pdProj	4	3	3.3180005e+02	6.3661862e-05	
PORTSQP	pdb	14	13	3.3141652e+02	6.9477107e-05	
n = 1000	pdbAll	14	13	3.3141644e+02	1.5362381e-05	
m = 1	pdProj	6	5	3.3141826e+02	1.9370925e-07	
POWELL20	pdb	89	88	5.2702749e+04	6.0871387e-05	
n = 100	pdbAll	89	88	5.2702761e+04	5.8910753e-05	
m = 100	pdProj	42	23	5.2702970e+04	9.9840000e-05	
PRIMAL1	pdb	17	16	-3.3779219e-02	5.7609892e-07	
n = 325	pdbAll	13	12	-3.3452860e-02	6.1293962e-07	
m = 85	pdProj	9	8	-3.5012963e-02	6.0728037e-05	
PRIMAL2	pdb	17	16	-3.2382212e-02	3.0769646e-07	
n = 649	pdbAll	12	11	-3.1930542e-02	3.2964824e-07	
m = 96	pdProj	4	3	-3.3698078e-02	3.4402273e-05	
PRIMAL3	pdb	18	17	-1.1126862e-01	1.1862014e-06	
n = 745	pdbAll	12	11	-1.1181254e-01	8.7691570e-07	
m = 111	pdProj	14	11	-1.3575583e-01	9.9935747e-05	
PRIMAL4	pdb	22	21	-7.0998318e-01	5.8029136e-07	
n = 1489	pdbAll	14	13	-7.1497119e-01	4.3738348e-07	
m = 75	pdProj	21	8	-7.4609065e-01	5.3640233e-05	
PRIMALC1	pdb	48	47	-5.8187977e+03	2.4737231e-05	
n = 230	pdbAll	34	33	-5.9339398e+03	1.6651658e-05	
m = 9	pdProj	2	1	8.9857345e-04	2.6892267e-05	
PRIMALC2	pdb	53	52	-3.2561442e+03	2.1469139e-05	
n = 231	pdbAll	40	39	-3.3456377e+03	1.5756874e-05	
m = 7	pdProj	2	1	-1.9557512e-04	6.7355086e-05	
PRIMALC5	pdb	33	32	-3.8986750e+02	1.4784183e-05	
n = 287	pdbAll	22	21	-3.6472665e+02	1.9613527e-05	
m = 8	pdProj	2	1	-8.4058414e-05	5.4793630e-05	
PRIMALC8	pdb	110	109	-1.7818701e+04	6.9037489e-05	
n = 520	pdbAll	101	100	-1.7950690e+04	6.1865001e-05	
m = 8	pdProj	2	1	2.9346713e-03	2.7999825e-05	
PT	pdb	87	86	1.7838348e-01	8.6342262e-07	
n = 2	pdbAll	81	80	1.7837958e-01	1.0001307e-05	
m = 101	pdProj	26	25	1.7838463e-01	1.0322662e-05	
QC	pdb	27	26	-9.5596427e+02	2.0795391e-05	
n = 9	pdbAll	27	26	-9.5614182e+02	3.2833323e-05	

Table 5: Results on 212 CUTEst LC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 4	pdProj	15	13	-9.5653797e+02	2.5451923e-05	
QCNEW	pdb	3	2	-8.0624720e+02	5.4996655e-05	
n = 9	pdbAll	3	2	-8.0624733e+02	5.4999688e-05	
m = 3	pdProj	2	1	-8.0660547e+02	9.9978186e-05	
QPCBLEND	pdb	22	21	-1.1930157e-02	4.2610862e-05	
n = 83	pdbAll	22	21	-1.1268020e-02	3.6737519e-05	
m = 74	pdProj	9	8	-8.2621469e-03	9.7655365e-05	
QPCBOEI2	pdb	--	--	1.0895861e+05	8.1088877e-02	itn
n = 143	pdbAll	--	--	1.0898644e+05	8.1087273e-02	itn
m = 166	pdProj	27	20	7.9821201e+06	9.6000000e-05	
QPNBLEND	pdb	21	20	-1.3351487e-02	4.3384477e-05	
n = 83	pdbAll	21	20	-1.2978492e-02	4.0183942e-05	
m = 74	pdProj	10	9	-1.1490232e-02	8.5700636e-05	
QPNBOEI1	pdb	--	--	5.2225148e+02	8.8973177e+00	itn
n = 384	pdbAll	--	--	5.2253662e+02	8.8972964e+00	itn
m = 351	pdProj	92	38	6.7311216e+06	9.9743429e-05	
QPNBOEI1	pdb	--	--	5.2225148e+02	8.8973177e+00	itn
n = 384	pdbAll	--	--	5.2253662e+02	8.8972964e+00	itn
m = 351	pdProj	92	38	6.7311216e+06	9.9743429e-05	
QPNBOEI2	pdb	--	--	-1.7581434e+01	9.3856269e-02	itn
n = 143	pdbAll	--	--	-1.9765330e+00	9.3677263e-02	itn
m = 166	pdProj	36	23	1.4324863e+06	9.6000000e-05	
QPNSTAIR	pdb	--	--	1.1100735e+06	5.5339308e+00	itn
n = 467	pdbAll	--	--	1.1100734e+06	5.5339305e+00	itn
m = 356	pdProj	39	32	5.1460331e+06	9.6000000e-05	
RDW2D51F	pdb	7	6	1.1221179e-03	7.7613972e-05	
n = 578	pdbAll	7	6	1.1222939e-03	1.0081438e-10	
m = 225	pdProj	2	1	1.1211997e-03	3.8678916e-07	
RDW2D51U	pdb	2	1	8.3924280e-04	3.2089547e-07	
n = 578	pdbAll	2	1	8.3924280e-04	3.2089547e-07	
m = 225	pdProj	2	1	8.3924280e-04	3.2089547e-07	
RDW2D52B	pdb	3	2	1.1119053e-02	8.2577411e-05	
n = 578	pdbAll	3	2	1.1118963e-02	8.2439230e-05	
m = 225	pdProj	6	5	1.1087948e-02	3.9109297e-05	
RDW2D52F	pdb	3	2	1.1085516e-02	2.8277565e-05	
n = 578	pdbAll	3	2	1.1085488e-02	2.8209651e-05	
m = 225	pdProj	2	1	1.1073769e-02	1.3095108e-06	
RDW2D52U	pdb	2	1	1.0454949e-02	1.1561710e-06	
n = 578	pdbAll	2	1	1.0454949e-02	1.1561710e-06	
m = 225	pdProj	2	1	1.0454949e-02	1.1561710e-06	
READING2	pdb	1	0	0.0000000e+00	0.0000000e+00	
n = 303	pdbAll	1	0	0.0000000e+00	0.0000000e+00	
m = 200	pdProj	1	0	0.0000000e+00	0.0000000e+00	
S268	pdb	36	35	6.0789043e-05	3.8136469e-09	

Table 5: Results on 212 CUTEst LC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 5	pdbAll	25	24	1.6713046e-03	1.3638308e-08	
m = 5	pdProj	7	6	3.6289130e-06	2.5928728e-10	
S277-280	pdb	55	54	5.0763017e+00	4.9556040e-05	
n = 4	pdbAll	50	49	5.0758755e+00	9.8187773e-05	
m = 4	pdProj	4	3	5.0761904e+00	9.4678253e-06	
SIMPLLPA	pdb	23	22	9.9998250e-01	2.8134926e-05	
n = 2	pdbAll	17	16	1.0000014e+00	9.2483513e-07	
m = 2	pdProj	6	4	1.0000000e+00	1.0644767e-08	
SIMPLLPB	pdb	34	33	1.0999839e+00	1.7414427e-05	
n = 2	pdbAll	26	25	1.1000002e+00	1.7131023e-07	
m = 3	pdProj	22	14	1.1000001e+00	5.1506053e-05	
SIPOW1	pdb	26	25	-1.0000853e+00	3.6257590e-05	
n = 2	pdbAll	26	25	-1.0000817e+00	3.1432381e-05	
m = 100	pdProj	125	86	-9.9997943e-01	1.8071486e-07	
SIPOW1M	pdb	29	28	-1.0005130e+00	4.8157127e-05	
n = 2	pdbAll	29	28	-1.0005141e+00	5.0216248e-05	
m = 100	pdProj	28	22	-1.0005024e+00	1.3999255e-05	
SIPOW2	pdb	31	30	-1.0019776e+00	4.1915081e-06	
n = 2	pdbAll	31	30	-1.0019772e+00	1.0529849e-06	
m = 100	pdProj	304	301	-1.0019788e+00	4.4355387e-06	
SIPOW2M	pdb	27	26	-1.0000071e+00	3.1115367e-06	
n = 2	pdbAll	27	26	-1.0000069e+00	3.0242771e-06	
m = 100	pdProj	58	48	-1.0000000e+00	4.8194966e-10	
SIPOW3	pdb	19	18	5.0396974e-01	2.0670759e-06	
n = 4	pdbAll	19	18	5.0397103e-01	9.9968029e-05	
m = 100	pdProj	9	8	5.0397248e-01	4.2377757e-05	
SIPOW4	pdb	18	17	2.6107909e-01	1.7971290e-05	
n = 4	pdbAll	18	17	2.6107983e-01	9.4772334e-05	
m = 100	pdProj	10	9	2.6110702e-01	4.1826678e-05	
SMBANK	pdb	--	--	-6.9212047e+06	4.8396032e-08	ls
n = 117	pdbAll	210	209	-7.1292920e+06	1.2357759e-10	
m = 64	pdProj	12	11	-7.1292920e+06	6.5114000e-07	
SOSQP1	pdb	12	11	-1.7742990e-08	2.5077250e-05	
n = 200	pdbAll	9	8	-2.3214022e-08	3.9506189e-09	
m = 101	pdProj	3	2	-2.0609014e-03	4.1633671e-05	
SOSQP2	pdb	14	13	-4.8736980e+01	8.0739774e-05	
n = 200	pdbAll	14	13	-4.8737242e+01	2.4423289e-05	
m = 101	pdProj	8	7	-4.8737318e+01	1.3162810e-05	
SPANHYD	pdb	--	--	2.3915574e+08	1.9605300e-03	ls
n = 97	pdbAll	184	183	3.0060943e+02	7.8439524e-07	
m = 33	pdProj	31	22	2.3973800e+02	2.1331693e-09	
SSEBLIN	pdb	--	--	1.2149697e+07	2.0332646e+02	itn
n = 194	pdbAll	--	--	1.2149705e+07	2.0332603e+02	itn

Table 5: Results on 212 CUTEst LC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 72	pdProj	1993	99	1.6170600e+07	8.1430623e-10	
STANCMIN	pdb	12	11	4.2498278e+00	7.5070679e-05	
n = 3	pdbAll	12	11	4.2499130e+00	3.7975770e-05	
m = 2	pdProj	6	5	4.2500042e+00	7.0070689e-07	
STATIC3	pdb	--	--	-9.9617612e+39	7.9379644e-03	itn
n = 434	pdbAll	--	--	-3.0968718e+40	2.3823567e-02	itn
m = 96	pdProj	--	--	-8.3652186e+44	3.6907305e+02	itn
STCQP1	pdb	14	13	4.0405145e+03	4.5985005e-05	
n = 257	pdbAll	14	13	4.0405145e+03	4.4909472e-05	
m = 128	pdProj	6	5	4.0408537e+03	8.4042300e-05	
STCQP2	pdb	11	10	1.4294680e+03	6.4005591e-05	
n = 257	pdbAll	11	10	1.4294635e+03	5.9267461e-05	
m = 128	pdProj	7	6	1.4294615e+03	5.0647017e-05	
STEENBRA	pdb	156	155	1.6957674e+04	2.4489800e-05	
n = 432	pdbAll	153	152	1.6957674e+04	4.2762952e-05	
m = 108	pdProj	243	41	1.6957675e+04	8.0000000e-05	
STEENBRB	pdb	--	--	1.1437965e+04	2.2344494e-09	itn
n = 468	pdbAll	--	--	1.2794614e+04	1.3709818e-09	itn
m = 108	pdProj	--	--	5.0432796e+10	1.5101534e+03	ls
STEENBRC	pdb	--	--	3.5551241e+04	4.3447635e-06	itn
n = 540	pdbAll	--	--	2.8781262e+04	3.6542919e-12	near
m = 126	pdProj	--	--	2.0426661e+11	7.6474977e+03	ls
STEENBRD	pdb	346	345	1.1195019e+04	2.8329677e-05	
n = 468	pdbAll	289	288	1.1019141e+04	8.2327744e-06	
m = 108	pdProj	--	--	2.3659153e+10	1.4900503e+03	ls
STEENBRE	pdb	423	422	3.0760627e+04	8.1042729e-05	
n = 540	pdbAll	372	371	3.0761217e+04	6.1083928e-05	
m = 126	pdProj	--	--	1.7694957e+11	7.3603352e+03	ls
STEENBRF	pdb	--	--	1.1345149e+04	6.0120397e-11	itn
n = 468	pdbAll	--	--	1.1290017e+04	9.9999913e-12	itn
m = 108	pdProj	--	--	5.2878922e+10	1.3965778e+03	ls
STEENBRG	pdb	--	--	3.1890805e+04	5.5966076e-05	itn
n = 540	pdbAll	--	--	2.7919190e+04	2.0739372e-12	near
m = 126	pdProj	--	--	2.0848353e+11	7.6474978e+03	ls
STNQP1	pdb	14	13	-4.4729819e+03	2.7202498e-05	
n = 257	pdbAll	14	13	-4.4729862e+03	2.0828561e-05	
m = 128	pdProj	6	5	-4.4728241e+03	1.6559975e-06	
STNQP2	pdb	14	13	-7.2319867e+03	2.3514902e-05	
n = 257	pdbAll	14	13	-7.2319888e+03	1.9898567e-05	
m = 128	pdProj	6	5	-7.2320005e+03	2.4879611e-06	
SUPERSIM	pdb	23	22	6.6664959e-01	5.1218063e-05	
n = 2	pdbAll	11	10	6.6666667e-01	6.0408301e-09	
m = 2	pdProj	4	3	6.6666667e-01	7.7557609e-09	
TAME	pdb	22	21	0.0000000e+00	6.7166332e-05	

Table 5: Results on 212 CUTEst LC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 2	pdbAll	11	10	1.2325952e-32	8.1922290e-05	
m = 1	pdProj	4	3	0.0000000e+00	1.0493677e-08	
TARGUS	pdb	--	--	1.0748957e+03	2.6911533e+02	ls
n = 162	pdbAll	73	72	1.0837991e+03	7.3960813e-12	
m = 63	pdProj	12	11	1.0839997e+03	6.7540594e-06	
TFI2	pdb	35	34	6.4902794e-01	3.4625964e-06	
n = 3	pdbAll	33	32	6.4902621e-01	6.2467724e-06	
m = 101	pdProj	34	33	6.4902807e-01	1.2580761e-05	
TFI3	pdb	38	37	4.3009629e+00	5.7622354e-05	
n = 3	pdbAll	38	37	4.3009614e+00	5.8016298e-05	
m = 101	pdProj	16	15	4.3011215e+00	3.3526583e-05	
TWOD	pdb	54	53	3.1871897e-03	4.3707890e-05	
n = 31	pdbAll	45	44	3.3295169e-03	8.3505664e-05	
m = 10	pdProj	10	7	6.4862918e-03	7.3974534e-06	
UBH1	pdb	24	23	1.1473519e+00	6.7019328e-05	
n = 99	pdbAll	19	18	1.1473520e+00	1.5097641e-08	
m = 60	pdProj	9	8	8.1610475e+00	2.9993914e-05	
WALL10	pdb	--	--	-4.5585861e+05	1.0694193e-07	ls
n = 1461	pdbAll	--	--	-4.5581414e+05	1.8120420e-07	ls
m = 0	pdProj	80	25	-4.5595378e+05	7.6307688e-06	
WATER	pdb	--	--	0.0000000e+00	1.1200000e+03	ls
n = 31	pdbAll	--	--	0.0000000e+00	1.1200000e+03	ls
m = 10	pdProj	--	--	0.0000000e+00	1.1200000e+03	ls
YAO	pdb	78	77	8.8668078e+00	9.6727722e-05	
n = 202	pdbAll	76	75	8.8745341e+00	9.6554386e-05	
m = 200	pdProj	412	194	9.9972356e+00	9.6761176e-05	
ZECEVIC2	pdb	23	22	-4.1249217e+00	7.3489007e-07	
n = 2	pdbAll	19	18	-4.1249723e+00	1.1505893e-06	
m = 2	pdProj	10	6	-4.1250000e+00	8.4282872e-05	

Table 6: Results on 648 CUTEst nonlinearly constrained (NC) problems

Problem	Solver	Fe	Itn	Obj	Inf	Exit
10FOLDTR	pdb	50	49	0.0000000e+00	4.3057204e-05	
n = 1000	pdbAll	50	49	0.0000000e+00	4.3057204e-05	
m = 1000	pdProj	50	49	0.0000000e+00	4.3057204e-05	
A4X12	pdb	274	273	-3.6903721e+00	9.9987502e-05	
n = 130	pdbAll	249	248	-3.7180992e+00	9.8546772e-05	
m = 385	pdProj	224	118	-9.4620270e-01	9.9672093e-05	
ACOPP118	pdb	26	25	9.0915884e+04	5.8300566e-05	
n = 344	pdbAll	26	25	8.9934859e+04	5.6370837e-05	
m = 608	pdProj	275	69	1.2972777e+05	9.9998720e-05	
ACOPP14	pdb	14	13	4.0605777e+03	5.1654613e-05	
n = 38	pdbAll	14	13	4.2891898e+03	4.9307858e-05	
m = 68	pdProj	4	3	2.9313345e+03	7.5916391e-05	
ACOPP30	pdb	48	47	5.7682060e+02	9.9516226e-05	
n = 72	pdbAll	47	46	5.7682201e+02	9.7717879e-05	
m = 142	pdProj	36	28	5.7685158e+02	9.9840000e-05	
ACOPP57	pdb	43	42	1.6837759e+04	3.3733899e-05	
n = 128	pdbAll	43	42	1.6843969e+04	3.3806562e-05	
m = 274	pdProj	4	3	2.1545578e+04	9.1377419e-05	
ACOPR118	pdb	17	16	9.3280439e+04	6.2281911e-05	
n = 344	pdbAll	17	16	9.3113232e+04	6.1949085e-05	
m = 726	pdProj	5	4	1.1601472e+05	7.3394495e-05	
ACOPR14	pdb	15	14	4.3038789e+03	5.4996072e-05	
n = 38	pdbAll	16	15	5.5093852e+03	6.8882880e-05	
m = 82	pdProj	4	3	2.9285758e+03	5.8343023e-05	
ACOPR30	pdb	46	42	5.7678081e+02	9.9620979e-05	
n = 72	pdbAll	50	42	5.7678189e+02	9.9929567e-05	
m = 172	pdProj	114	66	5.7684874e+02	9.9582818e-05	
ACOPR57	pdb	35	34	1.5509012e+04	9.6478032e-05	
n = 128	pdbAll	35	34	1.5558349e+04	9.6593161e-05	
m = 331	pdProj	8	5	2.8678073e+04	7.3834693e-05	
AIRCRFTA	pdb	3	2	0.0000000e+00	3.8448695e-06	
n = 8	pdbAll	3	2	0.0000000e+00	3.8448695e-06	
m = 5	pdProj	3	2	0.0000000e+00	3.8448695e-06	
AIRPORT	pdb	24	23	4.7952447e+04	6.8032820e-05	
n = 84	pdbAll	22	21	4.7952560e+04	4.6635573e-05	
m = 42	pdProj	33	32	4.7952539e+04	5.4146616e-05	
ALJAZZAF	pdb	24	23	4.9254971e+03	2.9157832e-05	
n = 500	pdbAll	22	21	4.9254997e+03	2.6787281e-06	
m = 1	pdProj	6	5	4.9255003e+03	3.2228140e-06	
ALLINITA	pdb	41	40	3.3096472e+01	9.0290831e-05	
n = 4	pdbAll	41	40	3.3104421e+01	8.4150738e-05	
m = 4	pdProj	40	39	3.3105309e+01	8.3419419e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
ALLINITC	pdb	52	51	3.0211566e+01	4.2406542e-05	
n = 4	pdbAll	44	43	3.0213446e+01	4.2016282e-05	
m = 1	pdProj	43	42	3.0210386e+01	4.2651774e-05	
ALSOTAME	pdb	11	10	8.2155090e-02	2.2973924e-06	
n = 2	pdbAll	10	9	8.2216912e-02	2.9656316e-06	
m = 1	pdProj	13	7	8.2084902e-02	9.0122799e-07	
ARGAUSS	pdb	3	2	0.0000000e+00	5.5501435e-05	
n = 3	pdbAll	3	2	0.0000000e+00	5.5501435e-05	
m = 15	pdProj	3	2	0.0000000e+00	5.5501435e-05	
ARGLALE	pdb	21	20	0.0000000e+00	1.0000000e+00	stny
n = 200	pdbAll	21	20	0.0000000e+00	1.0000000e+00	stny
m = 400	pdProj	21	20	0.0000000e+00	1.0000000e+00	stny
ARGLBLE	pdb	--	--	0.0000000e+00	9.9625469e-01	a
n = 200	pdbAll	--	--	0.0000000e+00	9.9625469e-01	a
m = 400	pdProj	--	--	0.0000000e+00	9.9625438e-01	ls
ARGLCLE	pdb	--	--	-1.0000000e+00	1.0000000e+00	ls
n = 200	pdbAll	--	--	-1.0000000e+00	1.0000000e+00	ls
m = 399	pdProj	--	--	-1.0000000e+00	1.0000000e+00	ls
ARGTRIG	pdb	3	2	0.0000000e+00	9.3731941e-06	
n = 200	pdbAll	3	2	0.0000000e+00	9.3731941e-06	
m = 200	pdProj	3	2	0.0000000e+00	9.3731941e-06	
ARTIF	pdb	103	98	0.0000000e+00	6.6932620e-01	stny
n = 102	pdbAll	103	98	0.0000000e+00	6.6932620e-01	stny
m = 100	pdProj	103	98	0.0000000e+00	6.6932620e-01	stny
ARWHDNE	pdb	108	44	0.0000000e+00	4.9845149e-01	stny
n = 500	pdbAll	108	44	0.0000000e+00	4.9845149e-01	stny
m = 998	pdProj	113	38	0.0000000e+00	4.9845149e-01	stny
BA-L1	pdb	--	--	0.0000000e+00	7.9577375e-01	itn
n = 57	pdbAll	--	--	0.0000000e+00	7.9577375e-01	itn
m = 12	pdProj	--	--	0.0000000e+00	7.9577375e-01	itn
BA-L1SP	pdb	6	5	0.0000000e+00	5.1168138e-08	
n = 57	pdbAll	6	5	0.0000000e+00	5.1168138e-08	
m = 12	pdProj	6	5	0.0000000e+00	5.1168138e-08	
BARDNE	pdb	16	15	0.0000000e+00	8.2216042e-02	stny
n = 3	pdbAll	16	15	0.0000000e+00	8.2216042e-02	stny
m = 15	pdProj	16	15	0.0000000e+00	8.2216042e-02	stny
BATCH	pdb	387	386	2.5918029e+05	8.9556781e-05	
n = 48	pdbAll	387	386	2.5918029e+05	9.3803016e-05	
m = 73	pdProj	38	25	2.5918030e+05	2.2952449e-06	
BDQRTICNE	pdb	124	62	0.0000000e+00	1.8563033e+00	stny
n = 500	pdbAll	124	62	0.0000000e+00	1.8563033e+00	stny
m = 992	pdProj	124	62	0.0000000e+00	1.8563033e+00	stny
BDVALUE	pdb	35	34	0.0000000e+00	6.0006357e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 102	pdbAll	35	34	0.0000000e+00	6.0006357e-05	
m = 100	pdProj	35	34	0.0000000e+00	6.0006357e-05	
BDVALUES	pdb	33	30	0.0000000e+00	4.9584175e-05	
n = 102	pdbAll	33	30	0.0000000e+00	4.9584175e-05	
m = 100	pdProj	33	30	0.0000000e+00	4.9584175e-05	
BEALENE	pdb	26	17	0.0000000e+00	7.7826011e-05	
n = 2	pdbAll	26	17	0.0000000e+00	7.7826011e-05	
m = 3	pdProj	26	17	0.0000000e+00	7.7826011e-05	
BENNETT5	pdb	--	--	0.0000000e+00	2.4064333e-02	itn
n = 3	pdbAll	--	--	0.0000000e+00	2.4064333e-02	itn
m = 154	pdProj	--	--	0.0000000e+00	2.3736562e-02	itn
BIGGS6NE	pdb	100	73	0.0000000e+00	9.0013218e-05	
n = 6	pdbAll	100	73	0.0000000e+00	9.0013218e-05	
m = 13	pdProj	100	73	0.0000000e+00	9.0013218e-05	
BOOTH	pdb	3	2	0.0000000e+00	1.0738725e-08	
n = 2	pdbAll	3	2	0.0000000e+00	1.0738725e-08	
m = 2	pdProj	3	2	0.0000000e+00	1.0738725e-08	
BOX3NE	pdb	7	6	0.0000000e+00	3.7159232e-05	
n = 3	pdbAll	7	6	0.0000000e+00	3.7159232e-05	
m = 10	pdProj	7	6	0.0000000e+00	3.7159232e-05	
BOXBOD	pdb	40	31	0.0000000e+00	2.3405614e+01	stny
n = 2	pdbAll	40	31	0.0000000e+00	2.3405614e+01	stny
m = 6	pdProj	51	41	0.0000000e+00	2.3405614e+01	stny
BRATU2D	pdb	4	3	0.0000000e+00	2.5864206e-05	
n = 484	pdbAll	4	3	0.0000000e+00	2.5864206e-05	
m = 400	pdProj	4	3	0.0000000e+00	2.5864206e-05	
BRATU2DT	pdb	34	33	0.0000000e+00	7.8830562e-05	
n = 484	pdbAll	34	33	0.0000000e+00	7.8830562e-05	
m = 400	pdProj	34	33	0.0000000e+00	7.8830562e-05	
BRATU3D	pdb	4	3	0.0000000e+00	2.7613263e-07	
n = 125	pdbAll	4	3	0.0000000e+00	2.7613263e-07	
m = 27	pdProj	4	3	0.0000000e+00	2.7613263e-07	
BRITGAS	pdb	46	45	-1.6560867e-06	4.5304152e-05	
n = 450	pdbAll	39	38	-2.7199542e-06	7.4252454e-05	
m = 360	pdProj	--	--	5.3409454e+01	7.1803371e-02	itn
BROWNALE	pdb	11	8	0.0000000e+00	3.2958577e-05	
n = 200	pdbAll	11	8	0.0000000e+00	3.2958577e-05	
m = 200	pdProj	11	8	0.0000000e+00	3.2958577e-05	
BROWNBSNE	pdb	50	13	0.0000000e+00	3.8300641e-08	
n = 2	pdbAll	50	13	0.0000000e+00	3.8300641e-08	
m = 3	pdProj	67	13	0.0000000e+00	5.7043508e-09	
BROWNDENE	pdb	55	38	0.0000000e+00	1.7897779e+02	stny
n = 4	pdbAll	55	38	0.0000000e+00	1.7897779e+02	stny

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 20	pdProj	67	39	0.0000000e+00	1.7897779e+02	stny
BROYDN3D	pdb	4	3	0.0000000e+00	6.4973294e-05	
n = 100	pdbAll	4	3	0.0000000e+00	6.4973294e-05	
m = 100	pdProj	4	3	0.0000000e+00	6.4973294e-05	
BROYDNBD	pdb	17	16	0.0000000e+00	9.7530445e-05	
n = 100	pdbAll	17	16	0.0000000e+00	9.7530445e-05	
m = 100	pdProj	17	16	0.0000000e+00	9.7530445e-05	
BRYBNDNE	pdb	--	--	0.0000000e+00	5.0000000e+00	ls
n = 500	pdbAll	--	--	0.0000000e+00	5.0000000e+00	ls
m = 500	pdProj	--	--	0.0000000e+00	5.0000000e+00	ls
BT1	pdb	11	8	-9.9993566e-01	6.4666265e-07	
n = 2	pdbAll	11	8	-9.9993566e-01	6.4666265e-07	
m = 1	pdProj	11	8	-9.9993566e-01	6.4666265e-07	
BT2	pdb	12	11	3.2568210e-02	9.0730718e-07	
n = 3	pdbAll	12	11	3.2568210e-02	9.0730718e-07	
m = 1	pdProj	12	11	3.2568210e-02	9.0730718e-07	
BT4	pdb	7	5	-4.5510551e+01	1.6806836e-09	
n = 3	pdbAll	7	5	-4.5510551e+01	1.6806836e-09	
m = 2	pdProj	7	5	-4.5510551e+01	1.6806836e-09	
BT5	pdb	7	5	9.6171517e+02	2.9459918e-07	
n = 3	pdbAll	7	5	9.6171517e+02	2.9459918e-07	
m = 2	pdProj	7	5	9.6171517e+02	2.9459918e-07	
BT6	pdb	10	8	2.7704478e-01	8.2819178e-08	
n = 5	pdbAll	10	8	2.7704478e-01	8.2819178e-08	
m = 2	pdProj	10	8	2.7704478e-01	8.2819178e-08	
BT7	pdb	233	33	3.0640024e+02	5.0183129e-05	
n = 5	pdbAll	233	33	3.0640024e+02	5.0183129e-05	
m = 3	pdProj	233	33	3.0640024e+02	5.0183129e-05	
BT8	pdb	117	116	1.0000152e+00	1.5372462e-21	
n = 5	pdbAll	117	116	1.0000152e+00	1.5372462e-21	
m = 2	pdProj	117	116	1.0000152e+00	1.5372462e-21	
BT9	pdb	15	11	-1.0000009e+00	4.7906487e-07	
n = 4	pdbAll	15	11	-1.0000009e+00	4.7906487e-07	
m = 2	pdProj	15	11	-1.0000009e+00	4.7906487e-07	
BT10	pdb	7	6	-1.0000003e+00	1.3392196e-07	
n = 2	pdbAll	7	6	-1.0000003e+00	1.3392196e-07	
m = 2	pdProj	7	6	-1.0000003e+00	1.3392196e-07	
BT11	pdb	7	6	8.2484422e-01	3.5144461e-05	
n = 5	pdbAll	7	6	8.2484422e-01	3.5144461e-05	
m = 3	pdProj	7	6	8.2484422e-01	3.5144461e-05	
BT12	pdb	5	4	6.1881188e+00	2.9666463e-09	
n = 5	pdbAll	5	4	6.1881188e+00	2.9666463e-09	
m = 3	pdProj	5	4	6.1881188e+00	2.9666463e-09	
BT13	pdb	24	23	2.9048610e-22	2.8040815e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 5	pdbAll	23	22	-7.5837991e-21	9.7809532e-05	
m = 1	pdProj	96	20	-7.5403911e-19	4.9879211e-05	
BURKEHAN	pdb	32	31	4.1593352e-13	1.0000000e+00	stny
n = 1	pdbAll	32	31	4.1591036e-13	1.0000000e+00	stny
m = 1	pdProj	28	27	3.9999626e-13	1.0000000e+00	stny
BYRDSPHR	pdb	39	18	-4.6833085e+00	3.5026285e-05	
n = 3	pdbAll	39	18	-4.6833085e+00	3.5026285e-05	
m = 2	pdProj	42	19	-4.6833001e+00	6.7037604e-08	
C-RELOAD	pdb	--	--	-9.3718636e-01	8.9834971e-04	itn
n = 342	pdbAll	468	467	-9.3178166e-01	8.2558685e-05	
m = 284	pdProj	77	42	-9.7876235e-01	9.5645399e-08	
CAMSHAPE	pdb	--	--	-4.7784580e+00	1.4901644e-04	near
n = 100	pdbAll	490	489	-4.6918883e+00	9.9992238e-05	
m = 203	pdProj	486	244	-4.5600030e+00	9.9999020e-05	
CANTILVR	pdb	19	18	1.3399459e+00	2.3680482e-05	
n = 5	pdbAll	14	13	1.3399519e+00	1.0149023e-05	
m = 1	pdProj	12	11	1.3399509e+00	1.2248131e-05	
CAR2	pdb	30	29	2.6675923e+00	6.0814848e-05	
n = 179	pdbAll	27	26	2.6675893e+00	9.8302693e-06	
m = 146	pdProj	--	--	3.7636207e+00	3.6098023e-03	itn
CATENA	pdb	38	16	-6.7180917e+04	2.5124284e-05	
n = 99	pdbAll	38	16	-6.7180917e+04	2.5124284e-05	
m = 32	pdProj	38	16	-6.7180917e+04	2.5124284e-05	
CATENARY	pdb	--	--	-6.5756210e+03	1.8810869e-03	ls
n = 99	pdbAll	--	--	-6.5756210e+03	1.8810869e-03	ls
m = 32	pdProj	278	41	-6.7051121e+04	4.0967386e-05	
CATMIX	pdb	47	46	-3.3548768e-02	1.3770967e-05	
n = 303	pdbAll	54	53	-4.1881541e-02	2.5386521e-05	
m = 200	pdProj	7	6	-4.6617430e-02	9.7847308e-05	
CB2	pdb	25	24	1.9521825e+00	8.1217165e-05	
n = 3	pdbAll	20	19	1.9522245e+00	2.2474331e-08	
m = 3	pdProj	8	7	1.9522211e+00	5.2492378e-06	
CB3	pdb	9	8	1.9999995e+00	1.1235659e-06	
n = 3	pdbAll	9	8	1.9999995e+00	1.1131828e-06	
m = 3	pdProj	7	6	2.0000000e+00	2.8531493e-09	
CBRATU2D	pdb	4	3	0.0000000e+00	1.6721760e-06	
n = 98	pdbAll	4	3	0.0000000e+00	1.6721760e-06	
m = 50	pdProj	4	3	0.0000000e+00	1.6721760e-06	
CBRATU3D	pdb	4	3	0.0000000e+00	8.3742470e-08	
n = 128	pdbAll	4	3	0.0000000e+00	8.3742470e-08	
m = 16	pdProj	4	3	0.0000000e+00	8.3742470e-08	
CERI651A	pdb	--	--	0.0000000e+00	6.0943862e+00	a
n = 7	pdbAll	--	--	0.0000000e+00	6.0943862e+00	a

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 61	pdProj	--	--	0.0000000e+00	6.0943798e+00	itn
CERI651B	pdb	--	--	0.0000000e+00	2.7379555e+00	a
n = 7	pdbAll	--	--	0.0000000e+00	2.7379555e+00	a
m = 66	pdProj	46	20	0.0000000e+00	7.4404949e+00	stny
CERI651C	pdb	40	24	0.0000000e+00	4.0194455e+00	stny
n = 7	pdbAll	40	24	0.0000000e+00	4.0194455e+00	stny
m = 56	pdProj	--	--	0.0000000e+00	4.0194453e+00	a
CERI651D	pdb	--	--	0.0000000e+00	1.6672055e+00	a
n = 7	pdbAll	--	--	0.0000000e+00	1.6672055e+00	a
m = 67	pdProj	--	--	0.0000000e+00	1.9554499e+00	itn
CERI651E	pdb	57	33	0.0000000e+00	2.2040595e+00	stny
n = 7	pdbAll	57	33	0.0000000e+00	2.2040595e+00	stny
m = 64	pdProj	60	30	0.0000000e+00	2.2040595e+00	stny
CHACONN1	pdb	22	21	1.9521868e+00	5.3415092e-05	
n = 3	pdbAll	12	11	1.9522244e+00	6.2513572e-06	
m = 3	pdProj	7	6	1.9522245e+00	9.9976929e-05	
CHACONN2	pdb	10	9	1.9999850e+00	3.3958027e-05	
n = 3	pdbAll	10	9	1.9999852e+00	3.3553622e-05	
m = 3	pdProj	6	5	1.9999978e+00	4.9338532e-06	
CHAIN	pdb	178	35	5.0722467e+00	1.4610297e-05	
n = 102	pdbAll	178	35	5.0722467e+00	1.4610297e-05	
m = 51	pdProj	178	35	5.0722467e+00	1.4610297e-05	
CHAINWOONE	pdb	147	98	-1.0000000e+00	1.9868591e+00	stny
n = 100	pdbAll	147	98	-1.0000000e+00	1.9868591e+00	stny
m = 294	pdProj	147	98	-1.0000000e+00	1.9868591e+00	stny
CHANDHEQ	pdb	33	32	0.0000000e+00	7.7281603e-05	
n = 100	pdbAll	37	33	0.0000000e+00	7.0378703e-05	
m = 100	pdProj	34	33	0.0000000e+00	8.9422023e-05	
CHANDHEU	pdb	33	32	0.0000000e+00	5.7731633e-05	
n = 500	pdbAll	33	32	0.0000000e+00	5.7731633e-05	
m = 500	pdProj	33	32	0.0000000e+00	5.7731633e-05	
CHANNEL	pdb	8	7	1.0000000e+00	3.4431022e-06	
n = 450	pdbAll	8	7	1.0000000e+00	3.4431022e-06	
m = 448	pdProj	8	7	1.0000000e+00	3.4431022e-06	
CHARDIS1	pdb	21	20	1.4232779e-02	7.0271319e-05	
n = 400	pdbAll	20	19	9.0459824e-03	4.3933995e-05	
m = 199	pdProj	6	5	8.1094963e-04	3.6267669e-06	
CHEBYQADNE	pdb	--	--	0.0000000e+00	2.3832117e-02	itn
n = 100	pdbAll	--	--	0.0000000e+00	2.3832117e-02	itn
m = 100	pdProj	--	--	0.0000000e+00	2.5518125e-02	itn
CHEMRCTA	pdb	77	39	0.0000000e+00	6.7662427e-05	
n = 100	pdbAll	70	39	0.0000000e+00	4.9819661e-05	
m = 100	pdProj	85	34	0.0000000e+00	5.6952586e-06	
CHEMRCTB	pdb	32	29	0.0000000e+00	9.9598015e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 100	pdbAll	28	25	0.0000000e+00	4.8641126e-05	
m = 100	pdProj	39	21	0.0000000e+00	4.9777304e-05	
CHNRSBNE	pdb	98	43	0.0000000e+00	1.2062034e-05	
n = 50	pdbAll	98	43	0.0000000e+00	1.2062034e-05	
m = 98	pdProj	98	43	0.0000000e+00	1.2062034e-05	
CHNRSNBMNE	pdb	32	20	0.0000000e+00	8.1021246e-05	
n = 50	pdbAll	32	20	0.0000000e+00	8.1021246e-05	
m = 98	pdProj	32	20	0.0000000e+00	8.1021246e-05	
CHWIRUT1	pdb	26	24	0.0000000e+00	1.3119527e+01	stny
n = 3	pdbAll	26	24	0.0000000e+00	1.3119527e+01	stny
m = 214	pdProj	26	24	0.0000000e+00	1.3119527e+01	stny
CHWIRUT2	pdb	30	25	0.0000000e+00	1.1044254e+01	stny
n = 3	pdbAll	30	25	0.0000000e+00	1.1044254e+01	stny
m = 54	pdProj	30	25	0.0000000e+00	1.1044254e+01	stny
CLNLBEAM	pdb	63	62	3.4818984e+02	7.2912002e-05	
n = 303	pdbAll	47	46	3.4811473e+02	9.3982599e-05	
m = 200	pdProj	147	119	3.4487621e+02	7.0522711e-05	
CLUSTER	pdb	15	14	0.0000000e+00	7.6397699e-05	
n = 2	pdbAll	15	14	0.0000000e+00	7.6397699e-05	
m = 2	pdProj	15	14	0.0000000e+00	7.6397699e-05	
CONCON	pdb	26	25	-6.2307955e+03	6.2965933e-05	
n = 15	pdbAll	14	13	-6.2307955e+03	1.6187827e-05	
m = 11	pdProj	6	5	-6.2307955e+03	2.3283064e-10	
CONGIGMZ	pdb	132	129	2.7986755e+01	7.8677046e-05	
n = 3	pdbAll	92	88	2.7999331e+01	1.2435686e-05	
m = 5	pdProj	21	11	2.8000030e+01	4.2554129e-07	
COOLHANS	pdb	44	29	0.0000000e+00	1.0646052e-07	
n = 9	pdbAll	44	29	0.0000000e+00	1.0646052e-07	
m = 9	pdProj	44	29	0.0000000e+00	1.0646052e-07	
CORE1	pdb	--	--	8.3319794e+01	1.4773239e+01	itn
n = 65	pdbAll	--	--	9.0637606e+01	4.4894392e+00	itn
m = 59	pdProj	--	--	9.7137008e+01	3.4003520e-04	near
CORE2	pdb	--	--	3.8167589e+01	4.7439580e+02	itn
n = 157	pdbAll	--	--	3.9285781e+01	4.7916275e+02	itn
m = 134	pdProj	--	--	9.3907578e+01	2.8807177e+01	itn
CORKSCRW	pdb	248	247	2.6482899e+01	4.7472868e-05	
n = 456	pdbAll	236	235	2.6483119e+01	7.7313106e-05	
m = 350	pdProj	131	85	2.6483466e+01	8.7086577e-05	
COSHFUN	pdb	--	--	-7.5875393e-01	9.4610376e-04	itn
n = 601	pdbAll	--	--	-7.6118161e-01	3.2013343e-03	itn
m = 200	pdProj	--	--	-6.0931254e-01	1.0684958e-01	ls
CRESC100	pdb	544	418	5.6768030e-01	9.6358705e-05	
n = 6	pdbAll	406	359	5.6760854e-01	4.9034503e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 200	pdProj	140	41	5.6840328e-01	7.4735118e-05	
CRESC4	pdb	338	329	8.7190536e-01	5.3353766e-06	
n = 6	pdbAll	--	--	9.0580038e-01	1.3792195e-04	itn
m = 8	pdProj	1426	247	8.7184185e-01	9.9854593e-05	
CRESC50	pdb	--	--	4.7922330e+01	4.8488442e-03	itn
n = 6	pdbAll	--	--	1.0562928e+01	4.6812557e-05	itn
m = 100	pdProj	--	--	8.9044311e-01	1.8211641e-02	ls
CSFI1	pdb	52	50	-4.9076174e+01	9.8630230e-05	
n = 5	pdbAll	61	53	-4.9075206e+01	2.3634887e-07	
m = 4	pdProj	11	7	-4.9075200e+01	6.5988169e-08	
CSFI2	pdb	93	92	5.5013211e+01	3.3974670e-05	
n = 5	pdbAll	78	77	5.5017606e+01	4.1322642e-08	
m = 4	pdProj	77	27	5.5017605e+01	2.1037272e-08	
CUBENE	pdb	11	5	0.0000000e+00	2.6069676e-05	
n = 2	pdbAll	11	5	0.0000000e+00	2.6069676e-05	
m = 2	pdProj	11	5	0.0000000e+00	2.6069676e-05	
CYCLIC3	pdb	22	21	0.0000000e+00	9.0856281e-06	
n = 1002	pdbAll	22	21	0.0000000e+00	9.0856281e-06	
m = 1002	pdProj	22	21	0.0000000e+00	9.0856281e-06	
CYCLOOCF	pdb	--	--	0.0000000e+00	4.9905406e-03	itn
n = 296	pdbAll	--	--	0.0000000e+00	4.9905406e-03	itn
m = 200	pdProj	--	--	0.0000000e+00	4.9905406e-03	itn
CYCLOOCT	pdb	2199	416	0.0000000e+00	8.5218875e-05	
n = 300	pdbAll	2199	416	0.0000000e+00	8.5218875e-05	
m = 200	pdProj	2199	416	0.0000000e+00	8.5218875e-05	
DANIWOOD	pdb	15	14	0.0000000e+00	3.6836494e-02	stny
n = 2	pdbAll	15	14	0.0000000e+00	3.6836494e-02	stny
m = 6	pdProj	15	14	0.0000000e+00	3.6836494e-02	stny
DANWOOD	pdb	15	14	0.0000000e+00	3.6836494e-02	stny
n = 2	pdbAll	15	14	0.0000000e+00	3.6836494e-02	stny
m = 6	pdProj	15	14	0.0000000e+00	3.6836494e-02	stny
DECONVBNE	pdb	44	43	0.0000000e+00	8.1717408e-05	
n = 63	pdbAll	41	40	0.0000000e+00	8.1726175e-05	
m = 40	pdProj	179	70	0.0000000e+00	5.0971736e-02	stny
DECONVC	pdb	49	48	4.7767234e-08	1.1958402e-05	
n = 63	pdbAll	46	45	8.6948871e-08	1.8520727e-05	
m = 1	pdProj	11	10	1.7447220e-06	9.5521440e-05	
DECONVNE	pdb	--	--	0.0000000e+00	2.1773025e-04	near
n = 63	pdbAll	--	--	0.0000000e+00	2.1773025e-04	near
m = 40	pdProj	--	--	0.0000000e+00	2.1781112e-04	near
DEMBO7	pdb	68	67	1.7446935e+02	5.6262012e-05	
n = 16	pdbAll	62	61	1.7453634e+02	3.0288276e-05	
m = 20	pdProj	15	10	1.7482605e+02	3.6778188e-05	
DEMYMALO	pdb	1182	206	-2.9999952e+00	4.5039188e-06	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 3	pdbAll	--	--	-2.5567062e+00	6.0253457e-01	itn
m = 3	pdProj	317	29	-3.0000017e+00	5.2719404e-06	
DENSCHNBNE	pdb	28	25	0.0000000e+00	1.5303768e-05	
n = 2	pdbAll	28	25	0.0000000e+00	1.5303768e-05	
m = 3	pdProj	28	25	0.0000000e+00	1.5303768e-05	
DENSCHNCNE	pdb	7	6	0.0000000e+00	5.0102939e-06	
n = 2	pdbAll	7	6	0.0000000e+00	5.0102939e-06	
m = 2	pdProj	7	6	0.0000000e+00	5.0102939e-06	
DENSCHNDNE	pdb	18	17	0.0000000e+00	1.1269033e-09	
n = 3	pdbAll	18	17	0.0000000e+00	1.1269033e-09	
m = 3	pdProj	18	17	0.0000000e+00	1.1269033e-09	
DENSCHNENE	pdb	16	9	0.0000000e+00	6.1680148e-07	
n = 3	pdbAll	16	9	0.0000000e+00	6.1680148e-07	
m = 3	pdProj	16	9	0.0000000e+00	6.1680148e-07	
DENSCHNFNE	pdb	5	4	0.0000000e+00	1.8855260e-06	
n = 2	pdbAll	5	4	0.0000000e+00	1.8855260e-06	
m = 2	pdProj	5	4	0.0000000e+00	1.8855260e-06	
DEVGLA1NE	pdb	45	23	0.0000000e+00	7.4610175e-06	
n = 4	pdbAll	45	23	0.0000000e+00	7.4610175e-06	
m = 24	pdProj	50	19	0.0000000e+00	4.6398741e-06	
DIPIGRI	pdb	16	11	6.8062994e+02	8.0564366e-07	
n = 7	pdbAll	15	10	6.8062965e+02	2.7239644e-06	
m = 4	pdProj	13	6	6.8062935e+02	3.5477198e-05	
DISC2	pdb	294	293	1.5624928e+00	9.0324079e-05	
n = 29	pdbAll	270	255	1.5625000e+00	3.2417712e-07	
m = 23	pdProj	417	79	1.5625000e+00	2.5461408e-06	
DISCS	pdb	--	--	3.2431348e+01	5.8362666e+01	itn
n = 36	pdbAll	--	--	2.6115697e+01	1.6038916e+01	itn
m = 66	pdProj	--	--	9.4508500e+01	9.7451627e-05	near
DITTERT	pdb	35	34	-1.9615423e+00	2.9734232e-05	
n = 61	pdbAll	32	31	-1.9616001e+00	1.1413189e-08	
m = 37	pdProj	--	--	-1.7379689e+01	1.1870115e+00	ls
DIXCHLNG	pdb	20	14	2.4720679e+03	9.4783835e-05	
n = 10	pdbAll	20	14	2.4720679e+03	9.4783835e-05	
m = 5	pdProj	20	14	2.4720679e+03	9.4783835e-05	
DIXCHLNV	pdb	33	32	4.5239000e-08	1.6336007e-05	
n = 100	pdbAll	31	30	8.0448266e-16	1.6898133e-09	
m = 50	pdProj	50	48	7.0657743e-10	6.2531395e-07	
DNIEPER	pdb	106	105	1.8743772e+04	2.5197237e-05	
n = 61	pdbAll	106	105	1.8743913e+04	1.0525689e-05	
m = 24	pdProj	28	19	1.8744014e+04	3.4168039e-08	
DRCAVTY1	pdb	21	8	0.0000000e+00	9.0064957e-06	
n = 196	pdbAll	21	8	0.0000000e+00	9.0064957e-06	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 100	pdProj	21	8	0.0000000e+00	9.0064957e-06	
DRCAVTY2	pdb	--	--	0.0000000e+00	1.2557041e-02	itn
n = 196	pdbAll	--	--	0.0000000e+00	1.2557041e-02	itn
m = 100	pdProj	--	--	0.0000000e+00	1.2557041e-02	itn
DRCAVTY3	pdb	10	6	0.0000000e+00	2.4745393e-05	
n = 196	pdbAll	10	6	0.0000000e+00	2.4745393e-05	
m = 100	pdProj	10	6	0.0000000e+00	2.4745393e-05	
DRUGDIS	pdb	--	--	4.2273988e+00	3.1875290e-02	itn
n = 304	pdbAll	--	--	4.4659206e+00	2.3816031e-02	itn
m = 200	pdProj	1948	267	4.2344011e+00	9.7373121e-05	
DRUGDISE	pdb	--	--	1.5681050e+02	3.8640585e-03	itn
n = 603	pdbAll	--	--	1.8179509e+02	3.8391906e-03	itn
m = 500	pdProj	--	--	2.8900840e+02	3.9283866e-03	itn
DTOC1NA	pdb	8	7	2.3950011e-01	8.8752584e-08	
n = 298	pdbAll	8	7	2.3950011e-01	8.8752584e-08	
m = 196	pdProj	8	7	2.3950011e-01	8.8752584e-08	
DTOC1NB	pdb	9	8	3.8293258e-01	1.1921214e-07	
n = 298	pdbAll	9	8	3.8293258e-01	1.1921214e-07	
m = 196	pdProj	9	8	3.8293258e-01	1.1921214e-07	
DTOC1NC	pdb	5	4	1.7218831e+00	3.3575318e-06	
n = 298	pdbAll	5	4	1.7218831e+00	3.3575318e-06	
m = 196	pdProj	5	4	1.7218831e+00	3.3575318e-06	
DTOC1ND	pdb	5	4	2.3208724e+00	1.9597777e-05	
n = 298	pdbAll	5	4	2.3208724e+00	1.9597777e-05	
m = 196	pdProj	5	4	2.3208724e+00	1.9597777e-05	
DTOC2	pdb	31	19	4.8563170e-01	1.2127540e-06	
n = 298	pdbAll	31	19	4.8563170e-01	1.2127540e-06	
m = 196	pdProj	31	19	4.8563170e-01	1.2127540e-06	
DTOC4	pdb	4	3	2.9474240e+00	8.7449230e-07	
n = 299	pdbAll	4	3	2.9474240e+00	8.7449230e-07	
m = 198	pdProj	4	3	2.9474240e+00	8.7449230e-07	
DTOC5	pdb	4	3	1.5321748e+00	3.4060556e-06	
n = 199	pdbAll	4	3	1.5321748e+00	3.4060556e-06	
m = 99	pdProj	4	3	1.5321748e+00	3.4060556e-06	
DTOC6	pdb	9	8	7.2773649e+02	3.2074028e-05	
n = 201	pdbAll	9	8	7.2773649e+02	3.2074028e-05	
m = 100	pdProj	9	8	7.2773649e+02	3.2074028e-05	
ECKERLE4	pdb	93	47	0.0000000e+00	3.6980490e-01	stny
n = 3	pdbAll	93	47	0.0000000e+00	3.6980490e-01	stny
m = 35	pdProj	75	38	0.0000000e+00	3.6980490e-01	stny
EG3	pdb	70	67	5.4251271e-10	2.4789663e-05	
n = 101	pdbAll	59	55	2.5839518e-07	5.0177437e-05	
m = 200	pdProj	17	12	5.0137842e-06	1.6616166e-05	
EGGCRATENE	pdb	16	15	0.0000000e+00	3.0196019e+00	stny

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 2	pdbAll	16	15	0.0000000e+00	3.0196019e+00	stny
m = 4	pdProj	16	15	0.0000000e+00	3.0196019e+00	stny
EIGENA	pdb	13	12	0.0000000e+00	4.9232324e-05	
n = 110	pdbAll	11	10	0.0000000e+00	1.4087170e-05	
m = 110	pdProj	5	4	0.0000000e+00	5.6064476e-06	
EIGENA2	pdb	5	4	2.6533791e-19	2.7072349e-07	
n = 110	pdbAll	5	4	2.6533791e-19	2.7072349e-07	
m = 55	pdProj	5	4	2.6533791e-19	2.7072349e-07	
EIGENACO	pdb	6	5	1.3892452e-13	1.2668749e-06	
n = 110	pdbAll	6	5	1.3892452e-13	1.2668749e-06	
m = 55	pdProj	6	5	1.3892452e-13	1.2668749e-06	
EIGENAU	pdb	6	5	0.0000000e+00	5.9318649e-06	
n = 110	pdbAll	6	5	0.0000000e+00	5.9318649e-06	
m = 110	pdProj	6	5	0.0000000e+00	5.9318649e-06	
EIGENB	pdb	162	123	0.0000000e+00	2.9464026e-06	
n = 110	pdbAll	162	123	0.0000000e+00	2.9464026e-06	
m = 110	pdProj	162	123	0.0000000e+00	2.9464026e-06	
EIGENB2	pdb	43	42	4.4728954e-01	1.9865603e-07	
n = 110	pdbAll	43	42	4.4728954e-01	1.9865603e-07	
m = 55	pdProj	43	42	4.4728954e-01	1.9865603e-07	
EIGENBCO	pdb	78	47	2.2367032e-01	7.7953342e-06	
n = 110	pdbAll	78	47	2.2367032e-01	7.7953342e-06	
m = 55	pdProj	78	47	2.2367032e-01	7.7953342e-06	
EIGENC	pdb	80	50	0.0000000e+00	3.1184115e-09	
n = 462	pdbAll	80	50	0.0000000e+00	3.1184115e-09	
m = 462	pdProj	80	50	0.0000000e+00	3.1184115e-09	
EIGENC2	pdb	13	12	2.0718757e-12	4.1167638e-07	
n = 462	pdbAll	13	12	2.0718757e-12	4.1167638e-07	
m = 231	pdProj	13	12	2.0718757e-12	4.1167638e-07	
EIGENCCO	pdb	90	36	4.4590217e-13	2.4834433e-08	
n = 462	pdbAll	90	36	4.4590217e-13	2.4834433e-08	
m = 231	pdProj	90	36	4.4590217e-13	2.4834433e-08	
EIGMAXA	pdb	18	17	-1.0000001e+00	2.2957105e-05	
n = 11	pdbAll	17	16	-1.0000005e+00	9.1865001e-06	
m = 11	pdProj	4	3	-9.9994129e-01	5.8709878e-05	
EIGMAXB	pdb	23	22	-6.9027849e-01	2.7211260e-05	
n = 11	pdbAll	19	18	-6.9027857e-01	4.5627539e-08	
m = 11	pdProj	7	6	-6.9032918e-01	3.7861401e-05	
EIGMAXC	pdb	10	9	-1.0000000e+00	5.0692493e-05	
n = 22	pdbAll	10	9	-1.0000000e+00	3.4054008e-08	
m = 22	pdProj	8	7	-1.0000001e+00	3.4785788e-07	
EIGMINA	pdb	21	20	1.0000047e+00	5.2394150e-05	
n = 11	pdbAll	21	20	1.0000009e+00	1.1302959e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 11	pdProj	5	4	9.9999997e-01	2.6504936e-08	
EIGMINB	pdb	23	22	6.9027835e-01	2.7325359e-05	
n = 11	pdbAll	22	18	6.9027365e-01	8.6500842e-05	
m = 11	pdProj	7	6	6.9032854e-01	3.8217676e-05	
EIGMINC	pdb	10	9	9.9999987e-01	5.0690530e-05	
n = 22	pdbAll	10	9	9.9999998e-01	3.4074684e-08	
m = 22	pdProj	8	7	1.0000002e+00	3.4619561e-07	
ELATTAR	pdb	--	--	5.1869888e+01	1.3382316e-03	itn
n = 7	pdbAll	--	--	1.0960914e+02	2.0282894e-04	near
m = 102	pdProj	55	32	4.6854278e+01	4.0558458e-06	
ELATVIDUNE	pdb	37	33	0.0000000e+00	4.8276661e+00	stny
n = 2	pdbAll	37	33	0.0000000e+00	4.8276661e+00	stny
m = 3	pdProj	37	33	0.0000000e+00	4.8276661e+00	stny
ELEC	pdb	142	122	4.4483465e+03	1.8404234e-05	
n = 300	pdbAll	142	122	4.4483465e+03	1.8404234e-05	
m = 100	pdProj	142	122	4.4483465e+03	1.8404234e-05	
ENGVAL2NE	pdb	38	28	0.0000000e+00	8.7713147e-06	
n = 3	pdbAll	38	28	0.0000000e+00	8.7713147e-06	
m = 5	pdProj	38	28	0.0000000e+00	8.7713147e-06	
ENSO	pdb	66	46	0.0000000e+00	5.7066359e+00	stny
n = 9	pdbAll	66	46	0.0000000e+00	5.7066359e+00	stny
m = 168	pdProj	74	44	0.0000000e+00	6.1279819e+00	stny
ERRINBAR	pdb	--	--	2.9989901e+01	4.1660862e-03	itn
n = 18	pdbAll	--	--	3.7486464e+01	3.7154323e-03	itn
m = 9	pdProj	--	--	3.6229449e+01	1.8378808e-03	ls
ERRINROSNE	pdb	44	36	0.0000000e+00	1.0959108e+00	stny
n = 50	pdbAll	44	36	0.0000000e+00	1.0959108e+00	stny
m = 98	pdProj	46	38	0.0000000e+00	1.0959108e+00	stny
ERRINRSMNE	pdb	72	49	0.0000000e+00	1.1302705e+00	stny
n = 50	pdbAll	72	49	0.0000000e+00	1.1302705e+00	stny
m = 98	pdProj	79	41	0.0000000e+00	1.1302705e+00	stny
EXP2NE	pdb	7	6	0.0000000e+00	1.4227828e-05	
n = 2	pdbAll	7	6	0.0000000e+00	1.4227828e-05	
m = 10	pdProj	7	6	0.0000000e+00	1.4227828e-05	
EXPFITNE	pdb	37	31	0.0000000e+00	3.1892202e-01	stny
n = 2	pdbAll	37	31	0.0000000e+00	3.1892202e-01	stny
m = 10	pdProj	37	31	0.0000000e+00	3.1892202e-01	stny
EXTROSNBNE	pdb	6	5	-2.0000000e+00	6.6426363e-07	
n = 1000	pdbAll	6	5	-2.0000000e+00	6.6426363e-07	
m = 999	pdProj	6	5	-2.0000000e+00	6.6426363e-07	
FBRAIN	pdb	15	14	0.0000000e+00	7.1753564e-02	stny
n = 2	pdbAll	15	14	0.0000000e+00	7.1753564e-02	stny
m = 2211	pdProj	15	14	0.0000000e+00	7.1753564e-02	stny
FBRAIN2	pdb	58	42	0.0000000e+00	4.9255912e-02	stny

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 4	pdbAll	58	42	0.0000000e+00	4.9255912e-02	stny
m = 2211	pdProj	56	41	0.0000000e+00	4.9255912e-02	stny
FBRAIN2NE	pdb	45	44	0.0000000e+00	5.2057628e-02	stny
n = 4	pdbAll	43	42	0.0000000e+00	5.2057628e-02	stny
m = 2211	pdProj	33	30	0.0000000e+00	5.2057628e-02	stny
FBRAIN3	pdb	436	134	0.0000000e+00	4.4575905e-02	stny
n = 6	pdbAll	436	134	0.0000000e+00	4.4575905e-02	stny
m = 2211	pdProj	1147	307	0.0000000e+00	4.4575905e-02	stny
FBRAINNE	pdb	25	24	0.0000000e+00	7.1753564e-02	stny
n = 2	pdbAll	19	18	0.0000000e+00	7.1753564e-02	stny
m = 2211	pdProj	15	14	0.0000000e+00	7.1753564e-02	stny
FEEDLOC	pdb	214	213	1.3689698e-02	9.9987937e-05	
n = 90	pdbAll	198	197	1.2741509e-02	7.5402110e-05	
m = 259	pdProj	17	15	4.6696263e-01	9.7724975e-05	
FLETCHER	pdb	57	56	1.9530259e+01	4.2941039e-06	
n = 4	pdbAll	60	59	1.9525964e+01	1.4975604e-06	
m = 4	pdProj	--	--	5.1257614e+01	2.2161199e-03	near
FLOSP2HH	pdb	67	59	0.0000000e+00	8.5461788e-01	stny
n = 363	pdbAll	67	59	0.0000000e+00	8.5461788e-01	stny
m = 323	pdProj	440	292	0.0000000e+00	8.5461788e-01	stny
FLOSP2HL	pdb	--	--	0.0000000e+00	3.3333333e-01	a
n = 363	pdbAll	--	--	0.0000000e+00	3.3333333e-01	a
m = 323	pdProj	--	--	0.0000000e+00	3.3333333e-01	itn
FLOSP2HM	pdb	125	41	0.0000000e+00	8.6343874e-01	stny
n = 363	pdbAll	125	41	0.0000000e+00	8.6343874e-01	stny
m = 323	pdProj	--	--	0.0000000e+00	8.6343874e-01	ls
FLOSP2TH	pdb	24	22	0.0000000e+00	5.0051883e-01	stny
n = 363	pdbAll	24	22	0.0000000e+00	5.0051883e-01	stny
m = 323	pdProj	33	25	0.0000000e+00	5.0051883e-01	stny
FLOSP2TL	pdb	38	32	0.0000000e+00	6.8157234e-05	
n = 363	pdbAll	38	32	0.0000000e+00	6.8157234e-05	
m = 323	pdProj	38	32	0.0000000e+00	6.8157234e-05	
FLOSP2TM	pdb	34	30	0.0000000e+00	7.4666059e-05	
n = 363	pdbAll	34	30	0.0000000e+00	7.4666059e-05	
m = 323	pdProj	34	30	0.0000000e+00	7.4666059e-05	
FLT	pdb	7	6	0.0000000e+00	3.8866698e-24	
n = 2	pdbAll	7	6	0.0000000e+00	3.8866698e-24	
m = 2	pdProj	7	6	0.0000000e+00	3.8866698e-24	
FREURONE	pdb	61	31	0.0000000e+00	4.9489521e+00	stny
n = 2	pdbAll	61	31	0.0000000e+00	4.9489521e+00	stny
m = 2	pdProj	62	35	0.0000000e+00	4.9489521e+00	stny
GASOIL	pdb	56	46	5.2409431e-03	2.5116748e-05	
n = 1303	pdbAll	47	37	5.2366933e-03	2.4851642e-06	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 1298	pdProj	11	9	5.2367593e-03	3.9779034e-05	
GAUSS1	pdb	14	13	0.0000000e+00	7.3322423e+00	stny
n = 8	pdbAll	14	13	0.0000000e+00	7.3322423e+00	stny
m = 250	pdProj	14	13	0.0000000e+00	7.3322423e+00	stny
GAUSS2	pdb	36	28	0.0000000e+00	7.1103131e+00	stny
n = 8	pdbAll	36	28	0.0000000e+00	7.1103131e+00	stny
m = 250	pdProj	36	28	0.0000000e+00	7.1103131e+00	stny
GAUSS3	pdb	34	26	0.0000000e+00	7.1395731e+00	stny
n = 8	pdbAll	34	26	0.0000000e+00	7.1395731e+00	stny
m = 250	pdProj	34	26	0.0000000e+00	7.1395731e+00	stny
GAUSSELM	pdb	--	--	-9.5753650e-01	9.9999947e-05	near
n = 506	pdbAll	--	--	-2.1632443e+00	4.7620957e-05	near
m = 1135	pdProj	931	320	-1.0477912e+01	9.4772550e-05	
GBRAIN	pdb	19	18	0.0000000e+00	4.2071238e-01	stny
n = 2	pdbAll	19	18	0.0000000e+00	4.2071238e-01	stny
m = 2200	pdProj	19	18	0.0000000e+00	4.2071238e-01	stny
GENROSEBNE	pdb	--	--	0.0000000e+00	2.6197876e+00	itn
n = 100	pdbAll	--	--	0.0000000e+00	2.6200782e+00	itn
m = 198	pdProj	139	73	0.0000000e+00	1.5994221e+00	stny
GENROSENE	pdb	130	96	0.0000000e+00	1.0000000e+00	stny
n = 100	pdbAll	130	96	0.0000000e+00	1.0000000e+00	stny
m = 199	pdProj	130	96	0.0000000e+00	1.0000000e+00	stny
GIGOMEZ1	pdb	--	--	7.8586412e-01	1.1663371e+00	itn
n = 3	pdbAll	--	--	3.1881320e-01	6.4498497e-01	itn
m = 3	pdProj	6855	355	-3.0000011e+00	3.1897095e-06	
GIGOMEZ2	pdb	24	23	1.9522135e+00	2.0559375e-05	
n = 3	pdbAll	17	16	1.9522240e+00	8.1162054e-07	
m = 3	pdProj	8	7	1.9522216e+00	4.6980652e-06	
GIGOMEZ3	pdb	9	8	2.0000000e+00	7.6262311e-08	
n = 3	pdbAll	9	8	2.0000000e+00	7.5434904e-08	
m = 3	pdProj	6	5	1.9999983e+00	3.7386626e-06	
GILBERT	pdb	27	19	4.4479900e+01	3.8789510e-05	
n = 100	pdbAll	25	17	4.4480101e+01	3.3483783e-07	
m = 1	pdProj	25	17	4.4480036e+01	1.2798354e-05	
GLIDER	pdb	--	--	-4.5710193e+02	6.3226629e-01	itn
n = 664	pdbAll	--	--	-4.5587705e+02	4.3783472e-01	itn
m = 608	pdProj	--	--	-8.4969148e+02	3.1057154e+00	itn
GOTTFR	pdb	8	5	0.0000000e+00	1.2702926e-05	
n = 2	pdbAll	8	5	0.0000000e+00	1.2702926e-05	
m = 2	pdProj	8	5	0.0000000e+00	1.2702926e-05	
GPP	pdb	25	24	1.4400469e+04	8.5036139e-05	
n = 250	pdbAll	25	24	1.4400470e+04	8.4740710e-05	
m = 498	pdProj	10	9	1.4400734e+04	1.0660277e-05	
GROUPING	pdb	8	7	1.3848283e+01	2.7929695e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 100	pdbAll	8	7	1.3848292e+01	2.7806526e-05	
m = 125	pdProj	4	3	1.3850271e+01	2.1521379e-06	
GROWTH	pdb	50	35	0.0000000e+00	5.5506897e-01	stny
n = 3	pdbAll	50	35	0.0000000e+00	5.5506897e-01	stny
m = 12	pdProj	49	34	0.0000000e+00	5.5506897e-01	stny
GULFNE	pdb	61	41	0.0000000e+00	4.2329125e-07	
n = 3	pdbAll	61	41	0.0000000e+00	4.2329125e-07	
m = 99	pdProj	61	41	0.0000000e+00	4.2329125e-07	
HADAMARD	pdb	--	--	5.2058094e-01	7.6132707e+00	itn
n = 325	pdbAll	--	--	4.3803263e-01	1.5099143e+01	itn
m = 819	pdProj	--	--	2.4339959e+00	3.1598256e-09	itn
HAHN1	pdb	123	94	0.0000000e+00	1.5409670e+00	stny
n = 7	pdbAll	123	94	0.0000000e+00	1.5409670e+00	stny
m = 236	pdProj	--	--	0.0000000e+00	1.5409670e+00	itn
HAIFAM	pdb	22	19	-4.5001200e+01	3.9706461e-05	
n = 99	pdbAll	22	19	-4.5000310e+01	2.1658319e-06	
m = 150	pdProj	470	66	-4.5000318e+01	1.0618853e-06	
HAIFAS	pdb	23	22	-4.5003782e-01	3.8024294e-05	
n = 13	pdbAll	16	15	-4.4999999e-01	1.4310651e-05	
m = 9	pdProj	13	12	-4.5001181e-01	2.6850313e-05	
HALDMADS	pdb	280	279	5.0422245e-04	8.7914656e-05	
n = 6	pdbAll	252	238	3.2981791e-04	5.0382669e-05	
m = 42	pdProj	58	37	3.1955307e-02	1.1411421e-05	
HANGING	pdb	16	14	-6.2017610e+02	6.0933650e-05	
n = 300	pdbAll	16	14	-6.2017608e+02	6.0159148e-05	
m = 180	pdProj	22	13	-6.2017605e+02	3.3652483e-06	
HATFLDANE	pdb	15	14	0.0000000e+00	4.0076462e-05	
n = 4	pdbAll	12	11	0.0000000e+00	4.9379315e-05	
m = 4	pdProj	7	6	0.0000000e+00	3.6586025e-06	
HATFLDBNE	pdb	43	42	0.0000000e+00	5.2758455e-02	stny
n = 4	pdbAll	42	41	0.0000000e+00	5.2758455e-02	stny
m = 4	pdProj	36	33	0.0000000e+00	5.2758455e-02	stny
HATFLDCNE	pdb	6	5	0.0000000e+00	5.4191488e-05	
n = 25	pdbAll	6	5	0.0000000e+00	4.3907978e-05	
m = 25	pdProj	4	3	0.0000000e+00	1.0438981e-06	
HATFLDDNE	pdb	26	25	0.0000000e+00	1.8688652e-04	stny
n = 3	pdbAll	26	25	0.0000000e+00	1.8688652e-04	stny
m = 10	pdProj	26	25	0.0000000e+00	1.8688652e-04	stny
HATFLDENE	pdb	33	17	0.0000000e+00	7.9351696e-04	stny
n = 3	pdbAll	33	17	0.0000000e+00	7.9351696e-04	stny
m = 21	pdProj	34	18	0.0000000e+00	7.9351696e-04	stny
HATFLDF	pdb	--	--	0.0000000e+00	6.3433155e-03	a
n = 3	pdbAll	--	--	0.0000000e+00	6.3433155e-03	a

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 3	pdProj	63	28	0.0000000e+00	5.2496982e-05	
HATFLDFLNE	pdb	--	--	0.0000000e+00	6.9063792e-03	a
n = 3	pdbAll	--	--	0.0000000e+00	6.9063792e-03	a
m = 3	pdProj	--	--	0.0000000e+00	6.3433155e-03	itn
HATFLDG	pdb	34	26	0.0000000e+00	5.5146940e-05	
n = 25	pdbAll	34	26	0.0000000e+00	5.5146940e-05	
m = 25	pdProj	34	26	0.0000000e+00	5.5146940e-05	
HEART6	pdb	1662	310	0.0000000e+00	5.2619434e-05	
n = 6	pdbAll	1662	310	0.0000000e+00	5.2619434e-05	
m = 6	pdProj	861	186	0.0000000e+00	3.0679342e-05	
HEART8	pdb	45	24	0.0000000e+00	2.6300491e-09	
n = 8	pdbAll	45	24	0.0000000e+00	2.6300491e-09	
m = 8	pdProj	45	24	0.0000000e+00	2.6300491e-09	
HELIXNE	pdb	10	8	0.0000000e+00	7.4420959e-05	
n = 3	pdbAll	10	8	0.0000000e+00	7.4420959e-05	
m = 3	pdProj	10	8	0.0000000e+00	7.4420959e-05	
HET-Z	pdb	47	46	9.9999949e-01	1.8489204e-07	
n = 2	pdbAll	45	44	9.9999915e-01	7.7685989e-07	
m = 202	pdProj	11	10	9.9999918e-01	3.9297680e-07	
HIMMELBA	pdb	3	2	0.0000000e+00	5.9988002e-08	
n = 2	pdbAll	3	2	0.0000000e+00	5.9988002e-08	
m = 2	pdProj	3	2	0.0000000e+00	5.9988002e-08	
HIMMELBC	pdb	7	5	0.0000000e+00	1.5261681e-07	
n = 2	pdbAll	7	5	0.0000000e+00	1.5261681e-07	
m = 2	pdProj	7	5	0.0000000e+00	1.5261681e-07	
HIMMELBD	pdb	73	34	0.0000000e+00	2.4335999e+00	stny
n = 2	pdbAll	73	34	0.0000000e+00	2.4335999e+00	stny
m = 2	pdProj	73	34	0.0000000e+00	2.4335999e+00	stny
HIMMELBE	pdb	3	2	0.0000000e+00	7.4383941e-05	
n = 3	pdbAll	3	2	0.0000000e+00	7.4383941e-05	
m = 3	pdProj	3	2	0.0000000e+00	7.4383941e-05	
HIMMELBFNE	pdb	--	--	0.0000000e+00	1.1346238e+03	itn
n = 4	pdbAll	--	--	0.0000000e+00	1.1346238e+03	itn
m = 7	pdProj	--	--	0.0000000e+00	1.1346238e+03	itn
HIMMELBK	pdb	32	22	5.1824568e-02	6.8572726e-05	
n = 24	pdbAll	35	22	5.1826738e-02	9.2671570e-05	
m = 14	pdProj	209	26	5.1860849e-02	3.7011676e-05	
HIMMELP2	pdb	1830	287	-6.2052369e+01	7.2368679e-15	
n = 2	pdbAll	188	59	-6.2053935e+01	2.2314196e-05	
m = 1	pdProj	814	129	-6.2053936e+01	5.5344123e-10	
HIMMELP3	pdb	83	26	-5.7846098e+01	8.2269611e-05	
n = 2	pdbAll	85	27	-5.8763139e+01	6.5155235e-05	
m = 2	pdProj	170	31	-5.8116781e+01	6.6520986e-05	
HIMMELP4	pdb	80	32	-5.8518730e+01	5.8706666e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 2	pdbAll	79	31	-5.8395758e+01	6.2609150e-05	
m = 3	pdProj	161	30	-5.8428818e+01	6.2498908e-05	
HIMMELP5	pdb	225	94	-5.8618148e+01	9.2513580e-06	
n = 2	pdbAll	224	81	-5.8404382e+01	9.8904766e-06	
m = 3	pdProj	2616	261	-5.8343532e+01	9.4671451e-05	
HIMMELP6	pdb	373	101	-5.8520442e+01	1.0957059e-05	
n = 2	pdbAll	274	80	-5.8473465e+01	1.1684490e-05	
m = 5	pdProj	1010	116	-5.9012788e+01	2.4521466e-05	
HS1NE	pdb	31	30	0.0000000e+00	2.9716481e-05	
n = 2	pdbAll	30	29	0.0000000e+00	1.4904268e-08	
m = 2	pdProj	8	7	0.0000000e+00	1.7071701e-05	
HS2NE	pdb	41	40	0.0000000e+00	2.2209856e+00	stny
n = 2	pdbAll	41	40	0.0000000e+00	2.2209856e+00	stny
m = 2	pdProj	40	29	0.0000000e+00	2.2209856e+00	stny
HS6	pdb	43	12	0.0000000e+00	0.0000000e+00	
n = 2	pdbAll	43	12	0.0000000e+00	0.0000000e+00	
m = 1	pdProj	43	12	0.0000000e+00	0.0000000e+00	
HS7	pdb	33	11	-1.7320554e+00	1.6069121e-05	
n = 2	pdbAll	33	11	-1.7320554e+00	1.6069121e-05	
m = 1	pdProj	37	11	-1.7320577e+00	2.4042697e-05	
HS8	pdb	6	4	-1.0000000e+00	9.2074206e-09	
n = 2	pdbAll	6	4	-1.0000000e+00	9.2074206e-09	
m = 2	pdProj	6	4	-1.0000000e+00	9.2074206e-09	
HS10	pdb	9	8	-1.0000009e+00	1.6555802e-06	
n = 2	pdbAll	9	8	-1.0000009e+00	1.6555798e-06	
m = 1	pdProj	9	8	-1.0000009e+00	1.6555798e-06	
HS12	pdb	15	11	-3.0000000e+01	6.7645605e-09	
n = 2	pdbAll	15	11	-3.0000000e+01	3.8681334e-09	
m = 1	pdProj	203	27	-3.0000000e+01	3.6330869e-09	
HS13	pdb	50	49	8.9107766e-01	8.8107229e-05	
n = 2	pdbAll	43	42	8.9103346e-01	8.8179497e-05	
m = 1	pdProj	38	37	8.9272848e-01	8.5417826e-05	
HS14	pdb	6	5	1.3934648e+00	6.9895811e-08	
n = 2	pdbAll	6	5	1.3934648e+00	6.9825106e-08	
m = 2	pdProj	5	4	1.3934530e+00	4.3928807e-06	
HS15	pdb	36	32	3.0661854e+02	7.1415639e-06	
n = 2	pdbAll	36	32	3.0661268e+02	3.3270719e-05	
m = 2	pdProj	23	17	3.0633830e+02	5.0973387e-05	
HS16	pdb	25	24	2.3143397e+01	1.9626504e-05	
n = 2	pdbAll	22	21	2.3144286e+01	5.7961319e-06	
m = 2	pdProj	42	12	2.5000061e-01	1.2650931e-05	
HS17	pdb	39	38	1.0000008e+00	1.6244929e-06	
n = 2	pdbAll	33	32	9.9998616e-01	1.0652561e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 2	pdProj	20	13	1.0000460e+00	1.2358851e-05	
HS18	pdb	47	40	4.9994058e+00	1.3108160e-05	
n = 2	pdbAll	35	30	4.9993479e+00	1.4359206e-05	
m = 2	pdProj	41	13	5.0000020e+00	1.1864213e-06	
HS19	pdb	32	31	-6.9618371e+03	3.6551026e-05	
n = 2	pdbAll	32	31	-6.9618174e+03	5.4987412e-06	
m = 2	pdProj	9	8	-6.9617382e+03	3.6970793e-05	
HS20	pdb	13	12	4.0197451e+01	1.5687603e-05	
n = 2	pdbAll	13	12	4.0198051e+01	8.3139218e-06	
m = 3	pdProj	7	5	4.0194484e+01	5.2289241e-05	
HS22	pdb	5	4	9.9999991e-01	4.6025720e-08	
n = 2	pdbAll	5	4	9.9999991e-01	4.6018872e-08	
m = 2	pdProj	5	4	9.9999991e-01	4.6018872e-08	
HS23	pdb	16	15	2.0000308e+00	3.7399995e-05	
n = 2	pdbAll	16	15	1.9999978e+00	4.6449798e-07	
m = 5	pdProj	11	8	1.9999993e+00	2.2477171e-07	
HS25NE	pdb	--	--	0.0000000e+00	6.4383323e-02	ls
n = 3	pdbAll	102	100	0.0000000e+00	1.3141243e-05	
m = 99	pdProj	108	74	0.0000000e+00	1.8162765e-05	
HS26	pdb	13	12	2.4660757e-08	8.8273928e-05	
n = 3	pdbAll	13	12	2.4660757e-08	8.8273928e-05	
m = 1	pdProj	13	12	2.4660757e-08	8.8273928e-05	
HS27	pdb	66	12	3.9999999e-02	2.6162233e-08	
n = 3	pdbAll	66	12	3.9999999e-02	2.6162233e-08	
m = 1	pdProj	66	12	3.9999999e-02	2.6162233e-08	
HS29	pdb	17	15	-2.2627417e+01	4.2970228e-07	
n = 3	pdbAll	17	15	-2.2627417e+01	3.7194326e-07	
m = 1	pdProj	39	13	-2.2627417e+01	2.8749309e-07	
HS30	pdb	11	10	1.0000540e+00	5.3888030e-05	
n = 3	pdbAll	10	9	1.0000448e+00	4.4879136e-05	
m = 1	pdProj	8	7	1.0000972e+00	9.7309277e-05	
HS31	pdb	30	29	5.9999754e+00	4.0945782e-06	
n = 3	pdbAll	26	25	5.9999193e+00	1.3451619e-05	
m = 1	pdProj	6	5	5.9999998e+00	2.1064663e-08	
HS32	pdb	12	11	1.0007007e+00	2.8594202e-06	
n = 3	pdbAll	12	11	1.0000839e+00	3.4676944e-07	
m = 2	pdProj	6	5	1.0000029e+00	2.0222237e-07	
HS33	pdb	51	50	-4.5857592e+00	4.0390042e-05	
n = 3	pdbAll	33	32	-4.5857713e+00	2.7318507e-05	
m = 2	pdProj	36	19	-4.5857884e+00	1.6515291e-05	
HS34	pdb	26	25	-8.3402648e-01	6.7002267e-05	
n = 3	pdbAll	20	19	-8.3403023e-01	4.5381501e-05	
m = 2	pdProj	208	26	-8.3403247e-01	1.2677525e-07	
HS39	pdb	15	11	-1.0000009e+00	4.7906487e-07	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 4	pdbAll	15	11	-1.0000009e+00	4.7906487e-07	
m = 2	pdProj	15	11	-1.0000009e+00	4.7906487e-07	
HS40	pdb	4	3	-2.5000084e-01	1.3368672e-06	
n = 4	pdbAll	4	3	-2.5000084e-01	1.3368672e-06	
m = 3	pdProj	4	3	-2.5000084e-01	1.3368672e-06	
HS42	pdb	5	4	1.3857845e+01	7.7125290e-06	
n = 4	pdbAll	5	4	1.3857845e+01	7.7125290e-06	
m = 2	pdProj	5	4	1.3857845e+01	7.7125290e-06	
HS43	pdb	13	12	-4.4000081e+01	3.5254001e-05	
n = 4	pdbAll	12	11	-4.4000121e+01	5.2859714e-05	
m = 3	pdProj	8	6	-4.4000000e+01	4.8841641e-08	
HS46	pdb	14	12	1.3637595e-07	8.2700463e-05	
n = 5	pdbAll	14	12	1.3637595e-07	8.2700463e-05	
m = 2	pdProj	14	12	1.3637595e-07	8.2700463e-05	
HS47	pdb	21	13	1.7917613e-07	2.9720892e-05	
n = 5	pdbAll	21	13	1.7917613e-07	2.9720892e-05	
m = 3	pdProj	21	13	1.7917613e-07	2.9720892e-05	
HS56	pdb	10	7	-3.4560000e+00	3.6653747e-09	
n = 7	pdbAll	10	7	-3.4560000e+00	3.6653747e-09	
m = 4	pdProj	10	7	-3.4560000e+00	3.6653747e-09	
HS57	pdb	6	5	3.0646302e-02	1.0851594e-06	
n = 2	pdbAll	6	5	3.0646300e-02	9.5607815e-07	
m = 1	pdProj	3	2	3.0646358e-02	1.3125032e-05	
HS59	pdb	--	--	-1.9799889e+00	5.0288460e-06	itn
n = 2	pdbAll	2761	385	-6.7467698e+00	1.7913855e-07	
m = 3	pdProj	577	48	-6.7494953e+00	1.0064153e-06	
HS60	pdb	10	9	3.2568678e-02	4.4581149e-05	
n = 3	pdbAll	8	7	3.2568206e-02	5.7882981e-07	
m = 1	pdProj	5	4	3.2569220e-02	9.4781906e-05	
HS61	pdb	47	23	-1.4364622e+02	3.3923073e-05	
n = 3	pdbAll	47	23	-1.4364622e+02	3.3923073e-05	
m = 2	pdProj	42	19	-1.4364614e+02	7.5060621e-08	
HS63	pdb	10	9	9.6171521e+02	2.9857129e-05	
n = 3	pdbAll	9	8	9.6171528e+02	9.7467779e-05	
m = 2	pdProj	7	5	9.6171517e+02	1.1652803e-06	
HS64	pdb	32	31	6.2998361e+03	3.0385357e-06	
n = 3	pdbAll	23	22	6.2998413e+03	4.9997912e-07	
m = 1	pdProj	20	19	6.2998424e+03	2.8503532e-09	
HS65	pdb	41	40	9.5352080e-01	9.7860942e-05	
n = 3	pdbAll	35	34	9.5352675e-01	3.5992540e-05	
m = 1	pdProj	22	11	9.5352586e-01	3.6297647e-05	
HS66	pdb	20	19	5.1816143e-01	2.3946313e-05	
n = 3	pdbAll	15	14	5.1816319e-01	4.4208541e-07	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 2	pdProj	5	4	5.1816323e-01	1.0043303e-07	
HS67	pdb	16	15	-1.1620709e+03	1.8301428e-06	
n = 3	pdbAll	16	15	-1.1620835e+03	1.3191420e-06	
m = 14	pdProj	8	6	-1.1621162e+03	3.6082014e-07	
HS68	pdb	22	21	-9.2099173e-01	4.1225500e-05	
n = 4	pdbAll	20	19	-9.2071656e-01	2.1243314e-05	
m = 2	pdProj	35	22	-9.2041698e-01	6.3144255e-07	
HS69	pdb	15	14	-9.5671366e+02	1.5315079e-05	
n = 4	pdbAll	14	13	-9.5671490e+02	4.0175905e-05	
m = 2	pdProj	14	10	-9.5671291e+02	2.5331790e-06	
HS70	pdb	26	25	7.4985168e-03	5.9704379e-10	
n = 4	pdbAll	22	21	7.4985253e-03	4.4705200e-06	
m = 1	pdProj	17	16	7.4985080e-03	4.1270729e-06	
HS71	pdb	33	32	1.7014006e+01	3.4577017e-05	
n = 4	pdbAll	30	29	1.7014017e+01	7.7003617e-08	
m = 2	pdProj	26	9	1.7014017e+01	8.4581015e-08	
HS72	pdb	35	34	7.2661502e+02	2.6103236e-05	
n = 4	pdbAll	35	34	7.2564944e+02	5.0481826e-05	
m = 2	pdProj	32	31	7.2374713e+02	9.8482840e-05	
HS73	pdb	15	14	2.9894674e+01	3.3216677e-05	
n = 4	pdbAll	15	14	2.9894608e+01	2.9483389e-05	
m = 3	pdProj	17	11	2.9894382e+01	2.5757393e-06	
HS74	pdb	38	37	5.1264976e+03	4.9605904e-05	
n = 4	pdbAll	36	35	5.1264981e+03	1.6515987e-08	
m = 5	pdProj	10	9	5.1264981e+03	2.0773635e-06	
HS75	pdb	46	45	5.1742001e+03	7.6288478e-05	
n = 4	pdbAll	43	42	5.1741379e+03	9.8630670e-05	
m = 5	pdProj	38	29	5.1744102e+03	3.6330362e-06	
HS77	pdb	9	7	2.4150509e-01	4.3714745e-05	
n = 5	pdbAll	9	7	2.4150509e-01	4.3714745e-05	
m = 2	pdProj	9	7	2.4150509e-01	4.3714745e-05	
HS78	pdb	5	4	-2.9197004e+00	8.1308738e-10	
n = 5	pdbAll	5	4	-2.9197004e+00	8.1308738e-10	
m = 3	pdProj	5	4	-2.9197004e+00	8.1308738e-10	
HS79	pdb	5	4	7.8776821e-02	1.0463767e-08	
n = 5	pdbAll	5	4	7.8776821e-02	1.0463767e-08	
m = 3	pdProj	5	4	7.8776821e-02	1.0463767e-08	
HS80	pdb	10	9	5.3945276e-02	8.4480297e-05	
n = 5	pdbAll	9	8	5.3949799e-02	8.1481870e-07	
m = 3	pdProj	6	5	5.3949839e-02	1.6724623e-07	
HS81	pdb	12	11	5.3947442e-02	4.3354199e-05	
n = 5	pdbAll	11	10	5.3949823e-02	4.2164480e-07	
m = 3	pdProj	8	6	5.3949296e-02	9.9812782e-06	
HS83	pdb	58	57	-3.0670093e+04	5.3995816e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 5	pdbAll	51	50	-3.0668083e+04	2.9408718e-05	
m = 3	pdProj	13	11	-3.0664607e+04	9.1184864e-06	
HS84	pdb	24	20	-5.2796045e+06	3.6292998e-05	
n = 5	pdbAll	24	20	-5.2796887e+06	3.3429254e-05	
m = 3	pdProj	37	8	-5.2803338e+06	4.8541208e-07	
HS85	pdb	3	2	-1.2554087e+00	1.1379381e-08	
n = 5	pdbAll	3	2	-1.2554092e+00	1.1388487e-08	
m = 21	pdProj	2	1	-1.2542912e+00	7.3725998e-10	
HS87	pdb	--	--	8.9966851e+03	2.9788875e-02	ls
n = 6	pdbAll	--	--	8.9966851e+03	2.9789926e-02	ls
m = 4	pdProj	--	--	8.9966300e+03	3.8161484e-02	ls
HS88	pdb	44	43	1.3272521e+00	3.8313704e-05	
n = 2	pdbAll	44	43	1.3272525e+00	3.8313239e-05	
m = 1	pdProj	47	43	1.3273064e+00	3.8246875e-05	
HS89	pdb	46	45	1.3273785e+00	3.8158117e-05	
n = 3	pdbAll	46	45	1.3273784e+00	3.8158260e-05	
m = 1	pdProj	49	45	1.3272651e+00	3.8297733e-05	
HS90	pdb	45	43	1.3274758e+00	3.8038384e-05	
n = 4	pdbAll	44	43	1.3274753e+00	3.8039001e-05	
m = 1	pdProj	47	43	1.3272228e+00	3.8349801e-05	
HS91	pdb	46	45	1.3272515e+00	3.8314500e-05	
n = 5	pdbAll	46	45	1.3272518e+00	3.8314121e-05	
m = 1	pdProj	48	45	1.3273054e+00	3.8248112e-05	
HS92	pdb	56	43	1.3273560e+00	3.8185833e-05	
n = 6	pdbAll	45	43	1.3273561e+00	3.8185697e-05	
m = 1	pdProj	45	43	1.3274231e+00	3.8103218e-05	
HS93	pdb	13	12	1.3506815e+02	6.1736194e-05	
n = 6	pdbAll	13	12	1.3506821e+02	6.1229847e-05	
m = 2	pdProj	5	4	1.3506639e+02	7.2568092e-05	
HS95	pdb	13	12	1.5684889e-02	2.5789118e-05	
n = 6	pdbAll	12	11	1.5748177e-02	8.3192205e-05	
m = 4	pdProj	52	8	1.5448122e-02	5.1265367e-06	
HS96	pdb	13	12	1.5711436e-02	2.3266862e-05	
n = 6	pdbAll	12	11	1.5792072e-02	7.4761710e-05	
m = 4	pdProj	33	6	1.1998835e-02	5.7741327e-05	
HS97	pdb	75	74	4.0702308e+00	3.6825564e-05	
n = 6	pdbAll	73	72	4.0706389e+00	2.3563439e-05	
m = 4	pdProj	104	22	3.1491181e+00	6.6481873e-06	
HS98	pdb	179	178	3.1319822e+00	9.0257954e-05	
n = 6	pdbAll	152	151	3.1451212e+00	5.6438171e-05	
m = 4	pdProj	16	11	3.1376879e+00	1.8596389e-05	
HS99	pdb	15	14	-8.3107989e+08	4.4125263e-05	
n = 7	pdbAll	15	14	-8.3107989e+08	4.2918196e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 2	pdProj	5	4	-8.3107989e+08	6.3148393e-06	
HS99EXP	pdb	30	29	-1.2600063e+12	2.4463123e-05	
n = 31	pdbAll	23	22	-1.2600063e+12	4.7664362e-06	
m = 21	pdProj	25	21	-1.2600063e+12	9.9323439e-07	
HS100	pdb	16	11	6.8062994e+02	8.0564366e-07	
n = 7	pdbAll	15	10	6.8062965e+02	2.7239644e-06	
m = 4	pdProj	13	6	6.8062935e+02	3.5477198e-05	
HS100LNP	pdb	17	13	6.8063006e+02	2.4009021e-06	
n = 7	pdbAll	17	13	6.8063006e+02	2.4009021e-06	
m = 2	pdProj	17	13	6.8063006e+02	2.4009021e-06	
HS100MOD	pdb	12	9	6.7868025e+02	1.7071367e-07	
n = 7	pdbAll	12	9	6.7867964e+02	6.1770570e-08	
m = 4	pdProj	11	8	6.7867977e+02	8.7396904e-06	
HS101	pdb	--	--	2.2014637e+03	4.5635163e-01	itn
n = 7	pdbAll	--	--	2.2015933e+03	4.5654009e-01	itn
m = 5	pdProj	188	61	1.8059754e+03	5.8744692e-05	
HS102	pdb	--	--	2.2044973e+03	4.6014295e-01	itn
n = 7	pdbAll	--	--	2.2041917e+03	4.5962427e-01	itn
m = 5	pdProj	69	29	8.9110181e+02	7.3237062e-05	
HS103	pdb	--	--	2.2058283e+03	4.6003663e-01	itn
n = 7	pdbAll	--	--	2.2058269e+03	4.6003418e-01	itn
m = 5	pdProj	115	31	6.5995385e+02	9.6615354e-05	
HS104	pdb	12	11	3.9510499e+00	4.0161585e-05	
n = 8	pdbAll	11	10	3.9510852e+00	3.0590819e-05	
m = 5	pdProj	7	6	3.9511617e+00	1.1512450e-06	
HS106	pdb	--	--	1.3758094e+04	9.5536148e-04	near
n = 8	pdbAll	--	--	1.4068302e+04	9.7160660e-04	near
m = 6	pdProj	3	2	1.4999932e+04	1.4967388e-06	
HS107	pdb	40	39	5.0547378e+03	2.7442826e-05	
n = 9	pdbAll	39	38	5.0546108e+03	4.0245224e-05	
m = 6	pdProj	41	15	5.0540630e+03	9.6420127e-05	
HS108	pdb	41	40	-8.6603431e-01	2.1867787e-05	
n = 9	pdbAll	35	34	-8.6602557e-01	6.2475711e-06	
m = 13	pdProj	19	11	-5.0000055e-01	4.8237711e-06	
HS109	pdb	101	78	5.3620143e+03	4.6485213e-05	
n = 9	pdbAll	103	76	5.3620556e+03	1.2296550e-05	
m = 10	pdProj	88	27	5.3620642e+03	4.6117024e-06	
HS11	pdb	6	5	-8.4984640e+00	3.4017650e-08	
n = 2	pdbAll	6	5	-8.4984640e+00	3.4006285e-08	
m = 1	pdProj	6	5	-8.4984641e+00	2.8935550e-08	
HS111	pdb	16	15	-4.7762212e+01	5.0827244e-05	
n = 10	pdbAll	14	13	-4.7762081e+01	4.3864997e-05	
m = 3	pdProj	15	13	-4.7762068e+01	4.3220602e-05	
HS111LNP	pdb	13	11	-4.7762174e+01	4.9748553e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 10	pdbAll	13	11	-4.7762174e+01	4.9748553e-05	
m = 3	pdProj	13	11	-4.7762174e+01	4.9748553e-05	
HS113	pdb	14	13	2.4309112e+01	3.4891411e-05	
n = 10	pdbAll	14	13	2.4308781e+01	3.0208226e-05	
m = 8	pdProj	14	8	2.4313531e+01	9.9529802e-05	
HS114	pdb	253	83	-1.7683352e+03	3.2052526e-05	
n = 10	pdbAll	335	86	-1.7688080e+03	4.2244791e-05	
m = 11	pdProj	78	51	-1.7688100e+03	2.3510229e-06	
HS116	pdb	153	152	9.7516218e+01	8.6849456e-05	
n = 13	pdbAll	146	145	9.7518409e+01	4.7191434e-05	
m = 14	pdProj	49	10	2.1910440e+02	9.0076386e-05	
HS117	pdb	237	236	3.2350671e+01	5.8304267e-05	
n = 15	pdbAll	103	102	3.2348767e+01	4.2464400e-05	
m = 5	pdProj	25	13	3.2348713e+01	5.8147552e-05	
HVYCRASH	pdb	--	--	-3.3465939e-04	1.4841669e-03	itn
n = 404	pdbAll	298	297	-4.3700618e-03	8.4983976e-05	
m = 300	pdProj	450	215	-1.4421002e-01	8.7098134e-05	
HYDCAR20	pdb	--	--	0.0000000e+00	1.0004526e+00	ls
n = 99	pdbAll	--	--	0.0000000e+00	1.0004526e+00	ls
m = 99	pdProj	--	--	0.0000000e+00	1.0004526e+00	ls
HYDCAR6	pdb	1255	239	0.0000000e+00	1.9316688e-05	
n = 29	pdbAll	1255	239	0.0000000e+00	1.9316688e-05	
m = 29	pdProj	1255	239	0.0000000e+00	1.9316688e-05	
HYPCIR	pdb	6	4	0.0000000e+00	2.6096003e-08	
n = 2	pdbAll	6	4	0.0000000e+00	2.6096003e-08	
m = 2	pdProj	6	4	0.0000000e+00	2.6096003e-08	
INTEGREQ	pdb	3	2	0.0000000e+00	1.3563630e-07	
n = 102	pdbAll	3	2	0.0000000e+00	1.3563630e-07	
m = 100	pdProj	3	2	0.0000000e+00	1.3563630e-07	
INTEQNE	pdb	3	2	0.0000000e+00	1.2856093e-07	
n = 12	pdbAll	3	2	0.0000000e+00	1.2856093e-07	
m = 12	pdProj	3	2	0.0000000e+00	1.2856093e-07	
JANNSON3	pdb	9	8	4.5576117e+00	3.1022960e-05	
n = 6	pdbAll	9	8	4.5576001e+00	1.9216255e-05	
m = 3	pdProj	8	7	4.5575854e+00	9.9988123e-05	
JANNSON4	pdb	13	12	1.0608684e+00	4.6822238e-05	
n = 3	pdbAll	13	12	1.0608713e+00	3.5342113e-05	
m = 2	pdProj	7	6	1.0608803e+00	2.6818585e-07	
JENSMPNE	pdb	36	29	0.0000000e+00	4.7407737e+00	stny
n = 2	pdbAll	36	29	0.0000000e+00	4.7407737e+00	stny
m = 10	pdProj	36	29	0.0000000e+00	4.7407737e+00	stny
JUDGENE	pdb	46	35	0.0000000e+00	2.0808257e+00	stny
n = 2	pdbAll	46	35	0.0000000e+00	2.0808257e+00	stny

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 20	pdProj	43	34	0.0000000e+00	2.0808257e+00	stny
JUNKTURN	pdb	77	51	9.3776393e-05	2.5692892e-04	stny
n = 510	pdbAll	77	51	9.3776393e-05	2.5692892e-04	stny
m = 350	pdProj	77	51	9.3776393e-05	2.5692892e-04	stny
KIRBY2	pdb	75	30	0.0000000e+00	5.7256123e-01	stny
n = 5	pdbAll	75	30	0.0000000e+00	5.7256123e-01	stny
m = 151	pdProj	75	30	0.0000000e+00	5.7256123e-01	stny
KISSING	pdb	370	369	1.0000145e+00	9.6171414e-08	
n = 127	pdbAll	344	343	1.0000167e+00	8.2234765e-08	
m = 903	pdProj	233	44	1.0000002e+00	2.1924133e-07	
KISSING2	pdb	--	--	7.7265970e+01	9.7926632e-02	itn
n = 100	pdbAll	--	--	1.0260129e+02	5.8055011e-02	itn
m = 625	pdProj	836	222	5.2659112e+00	2.7480218e-05	
KIWCRESC	pdb	--	--	-2.4822395e+00	4.0050357e+00	itn
n = 3	pdbAll	--	--	-2.4822406e+00	4.0050359e+00	itn
m = 2	pdProj	--	--	-2.4842441e+00	4.0044694e+00	itn
KOEBHELBNE	pdb	86	76	0.0000000e+00	4.9705133e+00	stny
n = 3	pdbAll	71	61	0.0000000e+00	4.9705133e+00	stny
m = 156	pdProj	72	62	0.0000000e+00	4.9705133e+00	stny
KOWOSBNE	pdb	133	71	0.0000000e+00	1.1112609e-02	stny
n = 4	pdbAll	133	71	0.0000000e+00	1.1112609e-02	stny
m = 11	pdProj	133	71	0.0000000e+00	1.1112609e-02	stny
KSS	pdb	9	8	0.0000000e+00	3.2161045e-07	
n = 100	pdbAll	9	8	0.0000000e+00	3.2161045e-07	
m = 100	pdProj	9	8	0.0000000e+00	3.2161045e-07	
KTMODEL	pdb	251	225	0.0000000e+00	1.4086790e+04	stny
n = 726	pdbAll	277	230	0.0000000e+00	1.4086790e+04	stny
m = 450	pdProj	81	15	0.0000000e+00	3.8978787e+04	stny
LAKES	pdb	19	18	3.5055198e+05	5.8631994e-05	
n = 90	pdbAll	15	14	3.5050012e+05	3.4324142e-05	
m = 78	pdProj	27	23	3.5065856e+05	8.8132590e-05	
LANCZOS1	pdb	85	43	0.0000000e+00	8.6544778e-05	
n = 6	pdbAll	85	43	0.0000000e+00	8.6544778e-05	
m = 24	pdProj	85	43	0.0000000e+00	8.6544778e-05	
LANCZOS2	pdb	81	43	0.0000000e+00	8.7369627e-05	
n = 6	pdbAll	81	43	0.0000000e+00	8.7369627e-05	
m = 24	pdProj	81	43	0.0000000e+00	8.7369627e-05	
LANCZOS3	pdb	72	41	0.0000000e+00	9.9349414e-05	
n = 6	pdbAll	72	41	0.0000000e+00	9.9349414e-05	
m = 24	pdProj	72	41	0.0000000e+00	9.9349414e-05	
LAUNCH	pdb	1	0	1.2220731e+01	9.4771533e-11	
n = 25	pdbAll	1	0	1.2220731e+01	9.4771533e-11	
m = 28	pdProj	1	0	1.2220731e+01	9.4771533e-11	
LCH	pdb	17	16	-4.2581443e+00	9.0663188e-08	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 300	pdbAll	17	16	-4.2581443e+00	9.0663188e-08	
m = 1	pdProj	17	16	-4.2581443e+00	9.0663188e-08	
LEAKNET	pdb	42	41	9.7745098e+00	9.8205981e-05	
n = 156	pdbAll	48	45	8.0275551e+00	8.1680558e-05	
m = 153	pdProj	52	33	8.3205659e+00	6.0246267e-05	
LEWISPOL	pdb	10	9	1.1267533e+00	3.4378025e-05	
n = 6	pdbAll	8	7	1.1267538e+00	3.4378729e-05	
m = 9	pdProj	3	2	1.1267400e+00	3.5662322e-05	
LIARWHDNE	pdb	24	18	0.0000000e+00	3.6779936e-05	
n = 500	pdbAll	24	18	0.0000000e+00	3.6779936e-05	
m = 1000	pdProj	24	18	0.0000000e+00	3.6779936e-05	
LINVERSENE	pdb	--	--	0.0000000e+00	1.0000000e+00	itn
n = 199	pdbAll	--	--	0.0000000e+00	1.0000000e+00	itn
m = 297	pdProj	--	--	0.0000000e+00	1.0000000e+00	itn
LIPPERT1	pdb	11	10	-1.0388145e-02	7.0590188e-05	
n = 221	pdbAll	11	10	-1.0388842e-02	7.0221600e-05	
m = 500	pdProj	23	14	-3.6026597e-02	9.0565787e-05	
LIPPERT2	pdb	1159	225	2.7735398e+01	9.5478768e-05	
n = 221	pdbAll	30	23	2.7765106e+01	1.1587829e-05	
m = 500	pdProj	134	45	2.8260771e+01	9.9017067e-05	
LOOTSMA	pdb	--	--	5.5963489e+00	1.9999321e+00	itn
n = 3	pdbAll	--	--	4.8696901e+00	2.0000153e+00	itn
m = 2	pdProj	--	--	2.1764249e+00	2.0001477e+00	itn
LSC1	pdb	--	--	0.0000000e+00	1.8255713e+00	a
n = 3	pdbAll	--	--	0.0000000e+00	1.8255713e+00	a
m = 6	pdProj	--	--	0.0000000e+00	1.8255713e+00	ls
LSC2	pdb	--	--	0.0000000e+00	2.0877164e+00	a
n = 3	pdbAll	--	--	0.0000000e+00	2.0877164e+00	a
m = 6	pdProj	265	112	0.0000000e+00	2.0877164e+00	stny
LUBRIF	pdb	355	342	-6.6283363e-03	3.2197329e+00	stny
n = 151	pdbAll	--	--	-6.6283431e-03	3.2197343e+00	itn
m = 100	pdProj	67	38	-6.6282572e-03	3.2197371e+00	stny
LUBRIFC	pdb	--	--	-7.0457922e-03	3.5146858e+00	itn
n = 151	pdbAll	--	--	-6.8375239e-03	3.5336945e+00	itn
m = 100	pdProj	623	155	1.5679414e+01	2.4611534e+00	stny
LUKSAN11	pdb	306	156	0.0000000e+00	7.5314905e-05	
n = 100	pdbAll	306	156	0.0000000e+00	7.5314905e-05	
m = 198	pdProj	121	96	0.0000000e+00	6.2090301e-05	
LUKSAN12	pdb	49	41	0.0000000e+00	1.0533086e+01	stny
n = 98	pdbAll	49	41	0.0000000e+00	1.0533086e+01	stny
m = 192	pdProj	49	41	0.0000000e+00	1.0533086e+01	stny
LUKSAN13	pdb	52	42	0.0000000e+00	2.3864441e+01	stny
n = 98	pdbAll	52	42	0.0000000e+00	2.3864441e+01	stny

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 224	pdProj	53	43	0.0000000e+00	2.3864441e+01	stny
LUKSAN14	pdb	63	54	0.0000000e+00	1.4783783e+00	stny
n = 98	pdbAll	63	54	0.0000000e+00	1.4783783e+00	stny
m = 224	pdProj	65	56	0.0000000e+00	1.4783783e+00	stny
LUKSAN15	pdb	275	98	0.0000000e+00	2.5748503e-01	stny
n = 100	pdbAll	275	98	0.0000000e+00	2.5748503e-01	stny
m = 196	pdProj	275	98	0.0000000e+00	2.5748503e-01	stny
LUKSAN16	pdb	--	--	0.0000000e+00	2.5748503e-01	a
n = 100	pdbAll	--	--	0.0000000e+00	2.5748503e-01	a
m = 196	pdProj	--	--	0.0000000e+00	2.5748503e-01	ls
LUKSAN17	pdb	252	95	0.0000000e+00	8.2580650e-02	stny
n = 100	pdbAll	252	95	0.0000000e+00	8.2580650e-02	stny
m = 196	pdProj	252	95	0.0000000e+00	8.2580650e-02	stny
LUKSAN21	pdb	17	15	0.0000000e+00	3.9229748e-08	
n = 100	pdbAll	17	15	0.0000000e+00	3.9229748e-08	
m = 100	pdProj	17	15	0.0000000e+00	3.9229748e-08	
LUKSAN22	pdb	131	122	0.0000000e+00	3.0000000e+00	stny
n = 100	pdbAll	131	122	0.0000000e+00	3.0000000e+00	stny
m = 198	pdProj	131	122	0.0000000e+00	3.0000000e+00	stny
LUKVLE1	pdb	6	5	6.2324572e+00	6.3866194e-06	
n = 100	pdbAll	6	5	6.2324572e+00	6.3866194e-06	
m = 98	pdProj	6	5	6.2324572e+00	6.3866194e-06	
LUKVLE2	pdb	--	--	-3.2831479e+64	3.1785536e+00	itn
n = 100	pdbAll	--	--	-3.2831479e+64	3.1785536e+00	itn
m = 49	pdProj	--	--	-4.5000000e+62	1.5152074e-04	near
LUKVLE3	pdb	9	8	2.7586585e+01	6.7906624e-08	
n = 100	pdbAll	9	8	2.7586585e+01	6.7906624e-08	
m = 2	pdProj	9	8	2.7586585e+01	6.7906624e-08	
LUKVLE4	pdb	146	85	-1.5361607e+12	5.5468385e-09	unb
n = 100	pdbAll	146	85	-1.5361607e+12	5.5468385e-09	unb
m = 49	pdProj	160	93	-2.0027354e+12	6.8023729e-09	unb
LUKVLE5	pdb	20	13	2.6392837e+00	2.8677398e-08	
n = 102	pdbAll	20	13	2.6392837e+00	2.8677398e-08	
m = 96	pdProj	20	13	2.6392837e+00	2.8677398e-08	
LUKVLE6	pdb	16	15	6.0376510e+03	2.9961690e-06	
n = 99	pdbAll	16	15	6.0376510e+03	2.9961690e-06	
m = 49	pdProj	16	15	6.0376510e+03	2.9961690e-06	
LUKVLE7	pdb	11	9	-2.5944423e+01	2.2733138e-07	
n = 100	pdbAll	11	9	-2.5944423e+01	2.2733138e-07	
m = 4	pdProj	11	9	-2.5944423e+01	2.2733138e-07	
LUKVLE8	pdb	41	33	8.2521928e+03	4.4245767e-05	
n = 100	pdbAll	41	33	8.2521928e+03	4.4245767e-05	
m = 98	pdProj	39	31	8.2545746e+03	5.4939150e-06	
LUKVLE9	pdb	33	22	1.0239618e+01	9.1381552e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 100	pdbAll	33	22	1.0239618e+01	9.1381552e-05	
m = 6	pdProj	43	30	1.0239618e+01	6.6426186e-05	
LUKVLE10	pdb	18	13	3.4924515e+01	8.0550026e-05	
n = 100	pdbAll	18	13	3.4924515e+01	8.0550026e-05	
m = 98	pdProj	801	111	3.4755623e+01	1.4285205e-05	
LUKVLE11	pdb	326	71	1.8486438e+02	2.1881420e-05	
n = 98	pdbAll	326	71	1.8486438e+02	2.1881420e-05	
m = 64	pdProj	326	71	1.8486438e+02	2.1881420e-05	
LUKVLE12	pdb	137	98	5.6495024e+09	6.7299005e-01	stny
n = 97	pdbAll	137	98	5.6495024e+09	6.7299005e-01	stny
m = 72	pdProj	--	--	5.6495024e+09	6.7299005e-01	itn
LUKVLE13	pdb	18	11	9.8673682e+02	6.8166619e-06	
n = 98	pdbAll	18	11	9.8673682e+02	6.8166619e-06	
m = 64	pdProj	18	11	9.8673682e+02	6.8166619e-06	
LUKVLE14	pdb	30	26	2.6023446e+06	8.6730278e-05	
n = 98	pdbAll	30	26	2.6023446e+06	8.6730278e-05	
m = 64	pdProj	30	26	2.6023446e+06	8.6730278e-05	
LUKVLE15	pdb	58	33	1.2139866e-05	8.8817842e-16	
n = 97	pdbAll	58	33	1.2139866e-05	8.8817842e-16	
m = 72	pdProj	58	33	1.2139866e-05	8.8817842e-16	
LUKVLE16	pdb	58	42	1.5022402e+02	3.2245386e-05	
n = 97	pdbAll	58	42	1.5022402e+02	3.2245386e-05	
m = 72	pdProj	58	42	1.5022402e+02	3.2245386e-05	
LUKVLE17	pdb	44	29	2.8437716e+02	9.2401562e-05	
n = 97	pdbAll	44	29	2.8437716e+02	9.2401562e-05	
m = 72	pdProj	44	29	2.8437716e+02	9.2401562e-05	
LUKVLE18	pdb	42	22	1.0414647e+02	6.0335025e-05	
n = 97	pdbAll	42	22	1.0414647e+02	6.0335025e-05	
m = 72	pdProj	43	25	1.0211593e+02	4.4242759e-05	
LUKVLI1	pdb	429	230	5.7152552e+00	5.3560985e-05	
n = 100	pdbAll	432	226	5.7153235e+00	3.4298873e-05	
m = 98	pdProj	421	217	5.7152775e+00	9.5265501e-05	
LUKVLI2	pdb	41	40	-2.5408280e+13	4.0486528e-05	unb
n = 100	pdbAll	40	39	-1.2990724e+12	3.9267483e-05	unb
m = 49	pdProj	71	40	-4.1091830e+14	9.9999573e-05	unb
LUKVLI3	pdb	15	14	1.1577586e+01	2.3634299e-06	
n = 100	pdbAll	14	13	1.1577565e+01	3.1631127e-05	
m = 2	pdProj	11	10	1.1577557e+01	3.1784454e-05	
LUKVLI4	pdb	563	226	-1.0596017e+12	9.9999813e-05	unb
n = 100	pdbAll	--	--	-1.6787203e+13	1.9350442e-04	a
m = 49	pdProj	246	148	-1.0316873e+12	9.9999999e-06	unb
LUKVLI5	pdb	1937	454	5.2677040e-01	2.5738911e-06	
n = 102	pdbAll	--	--	1.1168806e+00	5.6679130e-08	itn

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 96	pdProj	48	24	5.2676262e-01	4.3530974e-06	
LUKVLI6	pdb	76	75	6.0376522e+03	8.2412764e-07	
n = 99	pdbAll	72	71	6.0376490e+03	1.3480593e-05	
m = 49	pdProj	13	12	6.0376224e+03	6.3966776e-05	
LUKVLI7	pdb	55	54	-2.9291749e+01	4.0463985e-05	
n = 100	pdbAll	27	26	-2.9277996e+01	1.2573411e-05	
m = 4	pdProj	7	6	-2.9277830e+01	1.5463954e-05	
LUKVLI8	pdb	311	310	1.0283328e+04	9.9979060e-05	
n = 100	pdbAll	363	362	1.0459871e+04	4.7423067e-05	
m = 98	pdProj	220	136	7.9642742e+03	8.0553447e-05	
LUKVLI9	pdb	218	51	9.9903268e+00	1.3046651e-05	
n = 100	pdbAll	71	22	9.9925765e+00	3.4971683e-06	
m = 6	pdProj	106	31	9.9904641e+00	6.7686283e-06	
LUKVLI10	pdb	23	20	3.4924425e+01	3.2451840e-06	
n = 100	pdbAll	23	20	3.4924405e+01	1.2429148e-06	
m = 98	pdProj	20	13	3.4924430e+01	2.3348839e-05	
LUKVLI11	pdb	49	48	2.6988185e-04	7.2055314e-05	
n = 98	pdbAll	44	43	1.1315319e-05	5.6569179e-05	
m = 64	pdProj	21	11	1.3888895e-05	6.3340938e-05	
LUKVLI12	pdb	101	100	2.5622203e-07	7.4598600e-05	
n = 97	pdbAll	85	84	1.7882513e-06	9.7975371e-05	
m = 72	pdProj	65	34	5.7564051e-06	6.4654382e-05	
LUKVLI13	pdb	--	--	1.9560420e+03	3.1372932e+00	ls
n = 98	pdbAll	--	--	1.9132455e+03	3.0716871e+00	ls
m = 64	pdProj	34	18	1.2161585e+00	1.0853386e-06	
LUKVLI14	pdb	37	36	1.5683415e+04	5.5163772e-07	
n = 98	pdbAll	36	35	1.5658952e+04	2.1023040e-07	
m = 64	pdProj	14	10	1.5661818e+04	2.0264866e-05	
LUKVLI15	pdb	--	--	4.8606206e+03	1.1098672e-01	itn
n = 97	pdbAll	--	--	5.8826707e-02	1.0439254e-03	itn
m = 72	pdProj	523	73	1.2666707e-05	2.6930259e-06	
LUKVLI16	pdb	75	67	2.3909992e+01	8.7671369e-05	
n = 97	pdbAll	65	61	2.3910213e+01	1.7216651e-05	
m = 72	pdProj	19	12	2.3909008e+01	6.6434643e-05	
LUKVLI17	pdb	22	20	6.8256601e+00	5.7367180e-05	
n = 97	pdbAll	21	19	6.8245554e+00	5.6954123e-05	
m = 72	pdProj	14	10	6.8233448e+00	1.5876812e-05	
LUKVLI18	pdb	13	12	2.1351973e-04	6.8376568e-05	
n = 97	pdbAll	12	11	1.1854016e-04	6.3281997e-05	
m = 72	pdProj	12	11	1.5556886e-05	2.4865956e-05	
MADSEN	pdb	180	74	6.1641758e-01	3.2885974e-05	
n = 3	pdbAll	102	52	6.1643231e-01	2.9619023e-07	
m = 6	pdProj	29	14	6.1643244e-01	2.6824999e-08	
MADSSCHJ	pdb	--	--	1.2592442e+03	3.9440262e+00	itn

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 201	pdbAll	--	--	1.1759727e+03	5.0683408e-02	itn
m = 398	pdProj	--	--	9.9964549e+01	6.9956313e-01	itn
MAKELA1	pdb	79	48	-1.4142137e+00	7.0974942e-07	
n = 3	pdbAll	66	36	-1.4142145e+00	3.8604040e-06	
m = 2	pdProj	93	16	-1.4142182e+00	7.5180681e-06	
MAKELA2	pdb	29	28	7.1993800e+00	3.1568784e-05	
n = 3	pdbAll	17	16	7.1999996e+00	4.9335246e-08	
m = 3	pdProj	14	8	7.1999999e+00	3.6625458e-06	
MAKELA3	pdb	29	23	-2.5162960e-07	7.6285684e-05	
n = 21	pdbAll	25	18	-4.8659638e-08	3.0152056e-05	
m = 20	pdProj	20	16	-4.0076545e-08	6.5296796e-05	
MANCINONE	pdb	5	4	0.0000000e+00	2.7842617e-09	
n = 100	pdbAll	5	4	0.0000000e+00	2.7842617e-09	
m = 100	pdProj	5	4	0.0000000e+00	2.7842617e-09	
MANNE	pdb	47	46	-9.7453679e-01	2.9480371e-06	
n = 300	pdbAll	46	45	-9.7453584e-01	3.4385396e-06	
m = 200	pdProj	7	5	-9.7457258e-01	4.3213684e-06	
MARATOS	pdb	80	9	-1.0000216e+00	4.3274614e-05	
n = 2	pdbAll	80	9	-1.0000216e+00	4.3274614e-05	
m = 1	pdProj	80	9	-1.0000216e+00	4.3274614e-05	
MARINE	pdb	152	151	1.9752215e+07	5.7667953e-05	
n = 1415	pdbAll	152	151	1.9752215e+07	3.4019758e-05	
m = 1392	pdProj	350	34	1.9752215e+07	1.7932579e-06	
MATRIX2	pdb	10	9	4.2253834e-05	3.1912547e-05	
n = 6	pdbAll	10	9	4.2647663e-05	3.1851480e-05	
m = 2	pdProj	9	8	4.9869787e-05	3.7466516e-05	
MCONCON	pdb	26	25	-6.2307955e+03	6.2965933e-05	
n = 15	pdbAll	14	13	-6.2307955e+03	1.6187827e-05	
m = 11	pdProj	6	5	-6.2307955e+03	2.3283064e-10	
MESH	pdb	73	72	-1.0523291e+12	1.0000000e-04	unb
n = 41	pdbAll	65	64	-2.5021334e+12	9.9999998e-05	unb
m = 48	pdProj	2	1	1.4182085e-04	7.3148774e-05	
METHANB8	pdb	--	--	0.0000000e+00	6.3745010e-01	itn
n = 31	pdbAll	--	--	0.0000000e+00	6.3745010e-01	itn
m = 31	pdProj	--	--	0.0000000e+00	6.3638679e-01	itn
METHANL8	pdb	--	--	0.0000000e+00	3.0851674e-01	itn
n = 31	pdbAll	--	--	0.0000000e+00	3.0851674e-01	itn
m = 31	pdProj	--	--	0.0000000e+00	6.1547125e-01	itn
METHANOL	pdb	20	16	9.0224849e-03	2.1013784e-05	
n = 1505	pdbAll	17	13	9.0236087e-03	5.4707302e-05	
m = 1497	pdProj	35	13	9.0224145e-03	2.4417639e-05	
MEYER3NE	pdb	14	11	0.0000000e+00	5.3748409e+00	stny
n = 3	pdbAll	14	11	0.0000000e+00	5.3748409e+00	stny

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 16	pdProj	14	11	0.0000000e+00	5.3748409e+00	stny
MGH09	pdb	49	42	0.0000000e+00	1.4462003e-01	stny
n = 4	pdbAll	49	42	0.0000000e+00	1.4462003e-01	stny
m = 11	pdProj	44	37	0.0000000e+00	1.4462003e-01	stny
MGH10	pdb	--	--	0.0000000e+00	2.3041842e+04	itn
n = 3	pdbAll	--	--	0.0000000e+00	2.3041842e+04	itn
m = 16	pdProj	--	--	0.0000000e+00	2.3202074e+04	itn
MGH10S	pdb	66	41	0.0000000e+00	5.3748409e+00	stny
n = 3	pdbAll	66	41	0.0000000e+00	5.3748409e+00	stny
m = 16	pdProj	59	34	0.0000000e+00	5.3748409e+00	stny
MGH17	pdb	325	91	0.0000000e+00	4.4759885e-03	stny
n = 5	pdbAll	325	91	0.0000000e+00	4.4759885e-03	stny
m = 33	pdProj	325	91	0.0000000e+00	4.4759885e-03	stny
MGH17S	pdb	--	--	0.0000000e+00	1.3055308e-01	a
n = 5	pdbAll	--	--	0.0000000e+00	1.3055308e-01	a
m = 33	pdProj	413	122	0.0000000e+00	1.3055066e-01	stny
MIFFLIN1	pdb	8	7	-1.0000000e+00	3.7070399e-08	
n = 3	pdbAll	8	7	-9.9999998e-01	3.1997699e-08	
m = 2	pdProj	5	4	-1.0000038e+00	1.4647732e-05	
MIFFLIN2	pdb	73	47	-1.0000000e+00	6.0372466e-08	
n = 3	pdbAll	76	31	-1.0000000e+00	5.4932566e-08	
m = 2	pdProj	231	38	-1.0000062e+00	4.6994684e-05	
MINC44	pdb	59	58	2.5724292e-03	2.6489216e-05	
n = 311	pdbAll	46	45	2.5727766e-03	5.0460351e-05	
m = 262	pdProj	9	8	2.5711171e-03	9.3260188e-05	
MINMAXBD	pdb	62	35	1.1570565e+02	8.4563835e-05	
n = 5	pdbAll	62	35	1.1570577e+02	7.2653726e-05	
m = 20	pdProj	92	24	1.1570631e+02	1.2112154e-06	
MINMAXRB	pdb	23	13	1.7647072e-06	2.7307115e-05	
n = 3	pdbAll	23	13	1.8434193e-06	2.7026879e-05	
m = 4	pdProj	20	8	9.5496446e-07	1.6445084e-06	
MINPERM	pdb	30	29	3.8383595e-02	5.6597763e-05	
n = 51	pdbAll	28	27	3.8399976e-02	1.4284373e-08	
m = 36	pdProj	7	6	3.8380692e-02	6.7193792e-06	
MISRA1A	pdb	358	115	0.0000000e+00	1.3191566e-01	stny
n = 2	pdbAll	358	115	0.0000000e+00	1.3191566e-01	stny
m = 14	pdProj	358	115	0.0000000e+00	1.3191566e-01	stny
MISRA1B	pdb	55	35	0.0000000e+00	1.0762443e-01	stny
n = 2	pdbAll	55	35	0.0000000e+00	1.0762443e-01	stny
m = 14	pdProj	55	35	0.0000000e+00	1.0762443e-01	stny
MISRA1C	pdb	37	33	0.0000000e+00	8.3184645e-02	stny
n = 2	pdbAll	37	33	0.0000000e+00	8.3184645e-02	stny
m = 14	pdProj	37	33	0.0000000e+00	8.3184645e-02	stny
MISRA1D	pdb	80	38	0.0000000e+00	9.5417021e-02	stny

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 2	pdbAll	80	38	0.0000000e+00	9.5417021e-02	stny
m = 14	pdProj	80	38	0.0000000e+00	9.5417021e-02	stny
MISTAKE	pdb	42	40	-1.0000639e+00	6.0526444e-05	
n = 9	pdbAll	39	37	-1.0000594e+00	6.0596500e-05	
m = 13	pdProj	31	13	-1.0000003e+00	1.9927292e-05	
MODBEALENE	pdb	27	17	0.0000000e+00	6.3121438e-05	
n = 200	pdbAll	27	17	0.0000000e+00	6.3121438e-05	
m = 399	pdProj	30	20	0.0000000e+00	8.8743038e-05	
MOREBVNE	pdb	3	2	0.0000000e+00	4.2475581e-07	
n = 10	pdbAll	3	2	0.0000000e+00	4.2475581e-07	
m = 10	pdProj	3	2	0.0000000e+00	4.2475581e-07	
MRIBASIS	pdb	32	31	1.8218189e+01	8.7846189e-05	
n = 36	pdbAll	30	29	1.8218190e+01	7.8682882e-05	
m = 55	pdProj	10	9	1.8217900e+01	8.0000000e-05	
MSQRTA	pdb	6	4	0.0000000e+00	9.9167235e-05	
n = 100	pdbAll	6	4	0.0000000e+00	9.9167235e-05	
m = 100	pdProj	6	4	0.0000000e+00	9.9167235e-05	
MSQRTB	pdb	8	5	0.0000000e+00	6.1706157e-06	
n = 100	pdbAll	8	5	0.0000000e+00	6.1706157e-06	
m = 100	pdProj	8	5	0.0000000e+00	6.1706157e-06	
MSS1	pdb	33	32	-8.9754315e+00	3.8013397e-05	
n = 90	pdbAll	33	32	-8.9754315e+00	3.8013397e-05	
m = 73	pdProj	33	32	-8.9754315e+00	3.8013397e-05	
MSS2	pdb	53	51	-9.1770310e+01	1.5600992e-08	
n = 756	pdbAll	53	51	-9.1770310e+01	1.5600992e-08	
m = 703	pdProj	53	51	-9.1770310e+01	1.5600992e-08	
MUONSINE	pdb	42	34	0.0000000e+00	1.9905195e+01	stny
n = 1	pdbAll	42	34	0.0000000e+00	1.9905195e+01	stny
m = 512	pdProj	42	34	0.0000000e+00	1.9905195e+01	stny
MWRIGHT	pdb	8	6	2.4978784e+01	3.2533125e-06	
n = 5	pdbAll	8	6	2.4978784e+01	3.2533125e-06	
m = 3	pdProj	8	6	2.4978784e+01	3.2533125e-06	
NELSON	pdb	54	27	0.0000000e+00	6.1397282e-01	stny
n = 3	pdbAll	54	27	0.0000000e+00	6.1397282e-01	stny
m = 128	pdProj	950	210	0.0000000e+00	2.2227204e+00	stny
NET1	pdb	273	272	9.3655436e+05	8.8742607e-05	
n = 48	pdbAll	250	249	9.3815603e+05	5.5903517e-05	
m = 57	pdProj	39	25	9.4188688e+05	3.1810193e-06	
NET2	pdb	--	--	7.3660377e+05	1.0514907e-01	itn
n = 144	pdbAll	--	--	7.3700380e+05	1.0338836e-01	itn
m = 160	pdProj	45	33	1.5178812e+06	6.5231401e-05	
NET3	pdb	--	--	4.9286893e+05	2.8097033e-01	itn
n = 464	pdbAll	--	--	4.9283578e+05	2.8097145e-01	itn

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 521	pdProj	32	28	5.8726764e+06	8.0000000e-05	
NGONE	pdb	533	318	-6.3905792e-01	9.9999186e-05	
n = 50	pdbAll	121	108	-6.3758577e-01	5.7633667e-05	
m = 323	pdProj	52	25	-6.0910745e-01	4.4621328e-05	
NONDIANE	pdb	18	17	0.0000000e+00	9.8979158e-01	stny
n = 500	pdbAll	18	17	0.0000000e+00	9.8979158e-01	stny
m = 500	pdProj	18	17	0.0000000e+00	9.8979158e-01	stny
NONMSQRTNE	pdb	146	67	0.0000000e+00	8.5267501e-01	stny
n = 529	pdbAll	146	67	0.0000000e+00	8.5267501e-01	stny
m = 529	pdProj	172	66	0.0000000e+00	8.5267502e-01	stny
NONSCOMPNE	pdb	12	11	0.0000000e+00	9.1499042e-05	
n = 500	pdbAll	12	11	0.0000000e+00	1.4872894e-05	
m = 500	pdProj	7	6	0.0000000e+00	6.6123473e-05	
NUFFIELD	pdb	32	31	-6.2268257e-04	8.8146205e-05	
n = 270	pdbAll	27	26	-8.9587178e-04	9.7192819e-05	
m = 1300	pdProj	1431	418	-3.3990431e-02	9.9933819e-05	
NYSTROM5	pdb	711	183	0.0000000e+00	1.0310081e-02	stny
n = 18	pdbAll	711	183	0.0000000e+00	1.0310081e-02	stny
m = 20	pdProj	1009	305	0.0000000e+00	1.0310081e-02	stny
OET1	pdb	299	298	5.3818699e-01	2.8236688e-05	
n = 3	pdbAll	280	279	5.3818892e-01	2.8709454e-05	
m = 202	pdProj	--	--	8.2901127e-01	7.8124817e-05	itn
OET2	pdb	--	--	4.5680954e-01	2.4081062e-02	itn
n = 3	pdbAll	--	--	4.3729122e-01	1.8662059e-02	itn
m = 202	pdProj	--	--	1.4660851e-01	1.5783210e-04	itn
OET3	pdb	34	33	4.4821705e-03	3.4527035e-05	
n = 4	pdbAll	32	31	4.4626218e-03	8.8028910e-05	
m = 202	pdProj	19	18	4.4969656e-03	1.5379179e-05	
OET4	pdb	91	90	4.2960234e-03	7.0351904e-05	
n = 4	pdbAll	81	80	4.3254636e-03	8.0192304e-05	
m = 202	pdProj	28	24	4.2700058e-03	4.0979883e-05	
OET5	pdb	216	214	2.6169605e-03	9.6444739e-05	
n = 5	pdbAll	159	155	2.6775858e-03	9.8935592e-05	
m = 202	pdProj	28	21	2.6342387e-03	3.5397954e-05	
OET6	pdb	216	215	8.7151250e-02	3.4499365e-06	
n = 5	pdbAll	196	195	8.7151499e-02	3.5117584e-06	
m = 202	pdProj	44	40	8.7096226e-02	9.8585634e-05	
OET7	pdb	351	350	8.7150794e-02	6.0400119e-06	
n = 7	pdbAll	309	308	8.7150662e-02	4.1558586e-06	
m = 202	pdProj	776	181	1.9162764e-05	4.4850911e-05	
OPTCDEG2	pdb	126	125	2.3727208e+02	8.4953878e-05	
n = 302	pdbAll	123	122	2.3727164e+02	9.4158352e-05	
m = 200	pdProj	144	94	2.3727631e+02	6.6666667e-05	
OPTCDEG3	pdb	129	128	4.7613990e+01	7.0989175e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 302	pdbAll	105	104	4.7614239e+01	4.6447960e-05	
m = 200	pdProj	76	35	4.7614569e+01	6.6367264e-05	
OPTCNTRL	pdb	67	66	5.4999020e+02	9.3014384e-05	
n = 32	pdbAll	66	65	5.5000000e+02	2.9100524e-08	
m = 20	pdProj	20	19	5.5000006e+02	7.9378587e-07	
OPTCTRL3	pdb	28	21	5.0475836e+03	4.1666174e-05	
n = 302	pdbAll	28	21	5.0475836e+03	4.1666174e-05	
m = 200	pdProj	28	21	5.0475836e+03	4.1666174e-05	
OPTCTRL6	pdb	28	21	5.0475836e+03	4.1666174e-05	
n = 302	pdbAll	28	21	5.0475836e+03	4.1666174e-05	
m = 200	pdProj	28	21	5.0475836e+03	4.1666174e-05	
OPTMASS	pdb	426	215	-1.8954014e-01	1.2613374e-05	
n = 70	pdbAll	286	100	-1.8954225e-01	1.8683834e-05	
m = 55	pdProj	407	92	-1.8954175e-01	1.6111011e-05	
OPTPRLOC	pdb	698	219	-1.6418664e+01	3.3963962e-05	
n = 30	pdbAll	669	204	-1.6322867e+01	4.9502585e-05	
m = 30	pdProj	313	61	-1.6419210e+01	5.3806676e-06	
ORBIT2	pdb	--	--	1.5176652e+02	2.2307188e-02	itn
n = 268	pdbAll	413	386	3.1247506e+02	1.2482661e-05	
m = 207	pdProj	93	58	3.1267577e+02	3.5776957e-05	
ORTHRDM2	pdb	7	5	7.7757247e+00	2.6474822e-10	
n = 203	pdbAll	7	5	7.7757247e+00	2.6474822e-10	
m = 100	pdProj	7	5	7.7757247e+00	2.6474822e-10	
ORTHRDS2	pdb	58	24	7.8991112e+02	9.6708680e-05	
n = 203	pdbAll	58	24	7.8991112e+02	9.6708680e-05	
m = 100	pdProj	59	24	7.9001166e+02	9.0038897e-05	
ORTHREGA	pdb	7	6	4.1468406e+02	4.7082487e-05	
n = 133	pdbAll	7	6	4.1468406e+02	4.7082487e-05	
m = 64	pdProj	7	6	4.1468406e+02	4.7082487e-05	
ORTHREGB	pdb	4	3	1.2079880e-12	4.4438228e-09	
n = 27	pdbAll	4	3	1.2079880e-12	4.4438228e-09	
m = 6	pdProj	4	3	1.2079880e-12	4.4438228e-09	
ORTHREGC	pdb	10	8	1.9756397e+00	8.2605476e-05	
n = 105	pdbAll	10	8	1.9756397e+00	8.2605476e-05	
m = 50	pdProj	10	8	1.9756397e+00	8.2605476e-05	
ORTHREGD	pdb	--	--	2.5386122e+02	7.4516561e-03	itn
n = 103	pdbAll	--	--	2.5386122e+02	7.4516561e-03	itn
m = 50	pdProj	--	--	2.5386122e+02	7.4516561e-03	itn
ORTHREGE	pdb	67	36	4.6711341e+00	5.1441691e-05	
n = 36	pdbAll	285	77	4.6711230e+00	9.5581296e-05	
m = 20	pdProj	265	74	7.9343666e+00	2.5475013e-06	
ORTHREGF	pdb	18	16	5.3104665e+00	3.9738280e-05	
n = 305	pdbAll	18	13	5.3103935e+00	2.3532191e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 100	pdProj	28	22	4.5159968e+00	4.8852246e-05	
ORTHRGDM	pdb	--	--	4.9588193e+02	1.0392904e-02	itn
n = 203	pdbAll	--	--	4.9588193e+02	1.0392904e-02	itn
m = 100	pdProj	--	--	4.9588193e+02	1.0392904e-02	itn
ORTHRGDS	pdb	20	13	3.0507909e+01	2.9767193e-09	
n = 203	pdbAll	20	13	3.0507909e+01	2.9767193e-09	
m = 100	pdProj	20	13	3.0507909e+01	2.9767193e-09	
OSBORNE1	pdb	56	40	0.0000000e+00	4.4759855e-03	stny
n = 5	pdbAll	56	40	0.0000000e+00	4.4759855e-03	stny
m = 33	pdProj	--	--	0.0000000e+00	4.4759913e-03	itn
OSBORNE2	pdb	242	78	0.0000000e+00	6.6753377e-02	stny
n = 11	pdbAll	242	78	0.0000000e+00	6.6753377e-02	stny
m = 65	pdProj	272	82	0.0000000e+00	6.6753377e-02	stny
OSCIGRNE	pdb	7	6	0.0000000e+00	9.0384502e-05	
n = 1000	pdbAll	7	6	0.0000000e+00	9.0384502e-05	
m = 1000	pdProj	7	6	0.0000000e+00	9.0384502e-05	
OSCIPANE	pdb	730	119	0.0000000e+00	9.9999993e-01	stny
n = 500	pdbAll	730	119	0.0000000e+00	9.9999993e-01	stny
m = 500	pdProj	730	119	0.0000000e+00	9.9999993e-01	stny
PALMER1ANE	pdb	45	35	0.0000000e+00	8.6486158e-02	stny
n = 6	pdbAll	49	31	0.0000000e+00	8.6486164e-02	stny
m = 35	pdProj	45	37	0.0000000e+00	8.6486157e-02	stny
PALMER1BNE	pdb	52	34	0.0000000e+00	7.4371343e-01	stny
n = 4	pdbAll	38	24	0.0000000e+00	7.4371377e-01	stny
m = 35	pdProj	49	34	0.0000000e+00	7.4371342e-01	stny
PALMER1ENE	pdb	77	54	0.0000000e+00	1.0147177e-02	stny
n = 8	pdbAll	61	51	0.0000000e+00	1.0147177e-02	stny
m = 35	pdProj	84	39	0.0000000e+00	1.0147177e-02	stny
PALMER1NE	pdb	--	--	0.0000000e+00	3.8034902e+01	itn
n = 4	pdbAll	--	--	0.0000000e+00	3.8034902e+01	itn
m = 31	pdProj	24	22	0.0000000e+00	2.3002453e+02	stny
PALMER2ANE	pdb	40	38	0.0000000e+00	6.7097391e-02	stny
n = 6	pdbAll	35	33	0.0000000e+00	6.7097391e-02	stny
m = 23	pdProj	120	42	0.0000000e+00	6.7097391e-02	stny
PALMER2BNE	pdb	42	34	0.0000000e+00	2.2296966e-01	stny
n = 4	pdbAll	35	34	0.0000000e+00	2.2296966e-01	stny
m = 23	pdProj	44	39	0.0000000e+00	2.2296966e-01	stny
PALMER2ENE	pdb	289	109	0.0000000e+00	4.7596046e-03	stny
n = 8	pdbAll	308	113	0.0000000e+00	4.7596046e-03	stny
m = 23	pdProj	592	73	0.0000000e+00	4.7596046e-03	stny
PALMER2NE	pdb	--	--	0.0000000e+00	2.6559049e+01	itn
n = 4	pdbAll	--	--	0.0000000e+00	2.6559049e+01	itn
m = 23	pdProj	--	--	0.0000000e+00	2.6557690e+01	itn
PALMER3ANE	pdb	43	42	0.0000000e+00	7.0165395e-02	stny

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 6	pdbAll	43	41	0.0000000e+00	7.0165395e-02	stny
m = 23	pdProj	44	37	0.0000000e+00	7.0165396e-02	stny
PALMER3BNE	pdb	56	35	0.0000000e+00	6.7638261e-01	stny
n = 4	pdbAll	41	31	0.0000000e+00	6.7638261e-01	stny
m = 23	pdProj	79	46	0.0000000e+00	6.7638261e-01	stny
PALMER3ENE	pdb	182	72	0.0000000e+00	2.8826925e-03	stny
n = 8	pdbAll	182	68	0.0000000e+00	2.8826925e-03	stny
m = 23	pdProj	54	39	0.0000000e+00	2.8826925e-03	stny
PALMER3NE	pdb	--	--	0.0000000e+00	1.7195432e+01	itn
n = 4	pdbAll	--	--	0.0000000e+00	1.7193836e+01	itn
m = 23	pdProj	860	156	0.0000000e+00	1.7193658e+01	stny
PALMER4ANE	pdb	37	36	0.0000000e+00	9.0109788e-02	stny
n = 6	pdbAll	37	36	0.0000000e+00	9.0109787e-02	stny
m = 23	pdProj	40	34	0.0000000e+00	9.0109788e-02	stny
PALMER4BNE	pdb	47	33	0.0000000e+00	8.7404030e-01	stny
n = 4	pdbAll	53	36	0.0000000e+00	8.7404030e-01	stny
m = 23	pdProj	121	74	0.0000000e+00	8.7404030e-01	stny
PALMER4ENE	pdb	47	38	0.0000000e+00	4.7718004e-03	stny
n = 8	pdbAll	66	40	0.0000000e+00	4.7718003e-03	stny
m = 23	pdProj	46	36	0.0000000e+00	4.7718004e-03	stny
PALMER4NE	pdb	--	--	0.0000000e+00	1.7007694e+01	itn
n = 4	pdbAll	--	--	0.0000000e+00	1.7007694e+01	itn
m = 23	pdProj	345	160	0.0000000e+00	1.7007522e+01	stny
PALMER5ANE	pdb	--	--	0.0000000e+00	2.1049198e-01	itn
n = 8	pdbAll	--	--	0.0000000e+00	2.1026267e-01	itn
m = 12	pdProj	--	--	0.0000000e+00	2.1009898e-01	itn
PALMER5BNE	pdb	--	--	0.0000000e+00	7.0674639e-02	itn
n = 9	pdbAll	--	--	0.0000000e+00	7.0330355e-02	itn
m = 12	pdProj	--	--	0.0000000e+00	6.7672995e-02	ls
PALMER5ENE	pdb	--	--	0.0000000e+00	1.0384901e-01	itn
n = 8	pdbAll	--	--	0.0000000e+00	1.0353363e-01	itn
m = 12	pdProj	9	8	0.0000000e+00	6.7624757e-01	stny
PALMER6ANE	pdb	66	51	0.0000000e+00	1.0650614e-01	stny
n = 6	pdbAll	54	45	0.0000000e+00	1.0650614e-01	stny
m = 13	pdProj	57	46	0.0000000e+00	1.0650614e-01	stny
PALMER6ENE	pdb	156	66	0.0000000e+00	7.9858699e-03	stny
n = 8	pdbAll	57	35	0.0000000e+00	7.9858701e-03	stny
m = 13	pdProj	92	45	0.0000000e+00	7.9858699e-03	stny
PALMER7ANE	pdb	--	--	0.0000000e+00	2.6001010e+00	itn
n = 6	pdbAll	--	--	0.0000000e+00	2.6188397e+00	itn
m = 13	pdProj	--	--	0.0000000e+00	2.6348556e+00	itn
PALMER7ENE	pdb	--	--	0.0000000e+00	2.2964182e+00	a
n = 8	pdbAll	--	--	0.0000000e+00	2.2964182e+00	ls

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 13	pdProj	--	--	0.0000000e+00	1.8459551e+00	itn
PALMER8ANE	pdb	47	37	0.0000000e+00	1.2845229e-01	stny
n = 6	pdbAll	34	33	0.0000000e+00	1.2845229e-01	stny
m = 12	pdProj	776	182	0.0000000e+00	1.2845229e-01	stny
PALMER8ENE	pdb	57	37	0.0000000e+00	6.2823146e-02	stny
n = 8	pdbAll	65	39	0.0000000e+00	6.2823084e-02	stny
m = 12	pdProj	111	60	0.0000000e+00	6.2823077e-02	stny
PENLT1NE	pdb	2780	258	0.0000000e+00	8.3539980e-05	
n = 10	pdbAll	2780	258	0.0000000e+00	8.3539980e-05	
m = 11	pdProj	2780	258	0.0000000e+00	8.3539980e-05	
PENLT2NE	pdb	7	5	0.0000000e+00	8.4168330e-06	
n = 4	pdbAll	7	5	0.0000000e+00	8.4168330e-06	
m = 8	pdProj	7	5	0.0000000e+00	8.4168330e-06	
PFIT1	pdb	--	--	0.0000000e+00	5.8718982e+00	itn
n = 3	pdbAll	--	--	0.0000000e+00	4.3691299e-02	itn
m = 3	pdProj	808	194	0.0000000e+00	5.7650381e+00	stny
PFIT2	pdb	--	--	0.0000000e+00	9.4135559e+00	itn
n = 3	pdbAll	--	--	0.0000000e+00	2.0364399e+01	itn
m = 3	pdProj	--	--	0.0000000e+00	5.6682553e-01	itn
PFIT3	pdb	--	--	0.0000000e+00	1.8007612e-01	itn
n = 3	pdbAll	--	--	0.0000000e+00	2.3457343e-01	itn
m = 3	pdProj	--	--	0.0000000e+00	2.3003998e+00	itn
PFIT4	pdb	243	170	0.0000000e+00	7.8358610e+01	stny
n = 3	pdbAll	--	--	0.0000000e+00	5.4716190e+00	itn
m = 3	pdProj	--	--	0.0000000e+00	8.0351006e+01	itn
PINENE	pdb	33	31	1.2244920e+01	7.2156403e-05	
n = 1105	pdbAll	36	31	1.2245542e+01	7.2207697e-05	
m = 1095	pdProj	38	30	1.2297781e+01	7.2051191e-05	
POLAK1	pdb	9	8	2.7182818e+00	3.3445376e-11	
n = 3	pdbAll	9	8	2.7182818e+00	3.3446449e-11	
m = 2	pdProj	9	8	2.7182818e+00	3.3446449e-11	
POLAK2	pdb	6	5	5.4603583e+01	1.2264742e-05	
n = 11	pdbAll	6	5	5.4603583e+01	1.2257677e-05	
m = 2	pdProj	6	5	5.4603591e+01	4.4167182e-06	
POLAK3	pdb	169	168	5.9329890e+00	2.0025264e-05	
n = 12	pdbAll	131	130	5.9329885e+00	2.8782655e-05	
m = 10	pdProj	30	21	5.9330107e+00	2.4478170e-05	
POLAK4	pdb	9	8	1.0708296e-09	3.0743103e-09	
n = 3	pdbAll	7	6	8.6369424e-09	3.9994340e-05	
m = 3	pdProj	4	3	-5.6691171e-06	1.4329220e-05	
POLAK5	pdb	17	16	5.0000076e+01	1.4609098e-05	
n = 3	pdbAll	17	16	5.0000076e+01	1.4581687e-05	
m = 2	pdProj	4	3	4.9999992e+01	4.1396242e-05	
POLAK6	pdb	37	35	-4.4000088e+01	3.3322362e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 5	pdbAll	38	30	-4.4000248e+01	7.8249741e-05	
m = 4	pdProj	--	--	-2.2534340e+01	2.0590201e-02	near
POLYGON	pdb	57	56	-7.7971983e-01	2.3161425e-05	
n = 50	pdbAll	56	55	-7.7971940e-01	2.4822601e-05	
m = 324	pdProj	32	21	-7.7851756e-01	1.6112547e-05	
POROUS1	pdb	14	11	0.0000000e+00	7.0375580e-07	
n = 1024	pdbAll	14	11	0.0000000e+00	7.0375580e-07	
m = 900	pdProj	14	11	0.0000000e+00	7.0375580e-07	
POROUS2	pdb	10	6	0.0000000e+00	1.2270391e-07	
n = 1024	pdbAll	10	6	0.0000000e+00	1.2270391e-07	
m = 900	pdProj	10	6	0.0000000e+00	1.2270391e-07	
POWELLBS	pdb	121	64	0.0000000e+00	9.3773383e-05	
n = 2	pdbAll	121	64	0.0000000e+00	9.3773383e-05	
m = 2	pdProj	121	64	0.0000000e+00	9.3773383e-05	
POWELLSE	pdb	12	11	0.0000000e+00	9.5357966e-06	
n = 4	pdbAll	12	11	0.0000000e+00	9.5357966e-06	
m = 4	pdProj	12	11	0.0000000e+00	9.5357966e-06	
POWELLSQ	pdb	71	28	0.0000000e+00	3.1373982e-07	
n = 2	pdbAll	71	28	0.0000000e+00	3.1373982e-07	
m = 2	pdProj	71	28	0.0000000e+00	3.1373982e-07	
POWERSUMNE	pdb	71	45	0.0000000e+00	2.0043854e-01	stny
n = 4	pdbAll	71	45	0.0000000e+00	2.0043854e-01	stny
m = 4	pdProj	71	45	0.0000000e+00	2.0043854e-01	stny
PRICE3NE	pdb	7	6	0.0000000e+00	1.1189292e-05	
n = 2	pdbAll	7	6	0.0000000e+00	1.1189292e-05	
m = 2	pdProj	7	6	0.0000000e+00	1.1189292e-05	
PRICE4NE	pdb	15	14	0.0000000e+00	9.9663955e-06	
n = 2	pdbAll	15	14	0.0000000e+00	9.9663955e-06	
m = 2	pdProj	15	14	0.0000000e+00	9.9663955e-06	
PRODPL0	pdb	303	302	5.7580574e+01	2.6958255e-05	
n = 60	pdbAll	215	214	5.7556244e+01	2.9766796e-05	
m = 29	pdProj	96	38	5.8802733e+01	9.9900280e-05	
PRODPL1	pdb	170	169	3.3222131e+01	6.2772125e-05	
n = 60	pdbAll	119	118	3.2886126e+01	8.9188206e-05	
m = 29	pdProj	89	34	3.5737448e+01	7.4753380e-05	
QINGNE	pdb	7	4	0.0000000e+00	9.1599828e-05	
n = 100	pdbAll	7	4	0.0000000e+00	9.1599828e-05	
m = 100	pdProj	7	4	0.0000000e+00	9.1599828e-05	
QR3D	pdb	10	9	0.0000000e+00	5.7249613e-05	
n = 155	pdbAll	10	9	0.0000000e+00	6.4035144e-07	
m = 155	pdProj	8	7	0.0000000e+00	5.2471670e-07	
QR3DBD	pdb	11	10	0.0000000e+00	8.1085287e-05	
n = 457	pdbAll	11	10	0.0000000e+00	3.2201665e-06	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 610	pdProj	9	8	0.0000000e+00	2.3410462e-05	
RAT42	pdb	33	29	0.0000000e+00	1.8622955e+00	stny
n = 3	pdbAll	33	29	0.0000000e+00	1.8622955e+00	stny
m = 9	pdProj	33	29	0.0000000e+00	1.8622955e+00	stny
RAT43	pdb	--	--	0.0000000e+00	4.4533861e+02	a
n = 4	pdbAll	--	--	0.0000000e+00	4.4533861e+02	a
m = 15	pdProj	--	--	0.0000000e+00	4.4533861e+02	a
READING1	pdb	387	354	-1.6049090e-01	3.4616562e-05	
n = 202	pdbAll	211	139	-1.6017889e-01	8.6665510e-05	
m = 100	pdProj	2063	180	-1.6036553e-01	9.9586310e-05	
READING3	pdb	1	0	0.0000000e+00	0.0000000e+00	
n = 202	pdbAll	1	0	0.0000000e+00	0.0000000e+00	
m = 101	pdProj	1	0	0.0000000e+00	0.0000000e+00	
READING4	pdb	195	194	-2.7985952e-01	9.8857366e-05	
n = 101	pdbAll	128	127	-2.7988688e-01	6.2322101e-05	
m = 100	pdProj	24	19	-2.7987455e-01	8.4923262e-05	
READING5	pdb	11	10	2.0878655e-08	7.6663575e-06	
n = 101	pdbAll	9	8	6.2045132e-08	4.0815737e-06	
m = 100	pdProj	7	6	-5.0301048e-08	2.7609889e-07	
READING6	pdb	84	83	-1.4465702e+02	8.3472282e-05	
n = 102	pdbAll	84	83	-1.4465863e+02	6.6925880e-05	
m = 50	pdProj	17	11	-1.4465968e+02	2.5417239e-06	
READING7	pdb	--	--	-7.2289616e+02	3.7692629e-04	itn
n = 1002	pdbAll	--	--	-8.4543477e+02	6.0015327e-03	itn
m = 500	pdProj	107	77	-1.0865427e+03	4.9703053e-05	
READING9	pdb	21	20	-1.4480957e-02	8.7630123e-06	
n = 402	pdbAll	16	15	-1.5891741e-02	3.2222700e-06	
m = 200	pdProj	2	1	-1.8201050e-03	1.3409676e-06	
RECIPE	pdb	10	9	0.0000000e+00	9.4861840e-05	
n = 3	pdbAll	10	9	0.0000000e+00	9.4861840e-05	
m = 3	pdProj	10	9	0.0000000e+00	9.4861840e-05	
RES	pdb	14	13	0.0000000e+00	2.4326334e-09	
n = 20	pdbAll	14	13	0.0000000e+00	9.9826172e-07	
m = 14	pdProj	9	8	0.0000000e+00	9.9999850e-07	
RK23	pdb	--	--	5.5121511e-02	7.9035735e-01	itn
n = 17	pdbAll	--	--	6.8568726e-02	7.2982951e-01	itn
m = 11	pdProj	31	14	8.3333022e-02	6.7797390e-07	
ROBOT	pdb	33	32	6.5932988e+00	4.9648514e-09	
n = 14	pdbAll	24	23	6.5933773e+00	8.7282290e-06	
m = 2	pdProj	25	24	6.5932942e+00	5.2606504e-07	
ROBOTARM	pdb	31	30	9.1468993e+00	5.5825674e-05	
n = 562	pdbAll	30	29	9.1469025e+00	3.3479007e-05	
m = 402	pdProj	93	48	9.1501556e+00	4.9891619e-05	
ROCKET	pdb	--	--	-1.0270982e+00	1.7249803e-01	itn

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 607	pdbAll	--	--	-1.0281845e+00	1.6434956e-01	itn
m = 502	pdProj	--	--	-1.0129229e+00	7.0274222e-01	ls
ROSENMMX	pdb	17	13	-4.4000168e+01	8.3637642e-05	
n = 5	pdbAll	17	13	-4.4000133e+01	6.6731175e-05	
m = 4	pdProj	21	9	-4.4000001e+01	1.1072555e-05	
ROSEPETAL	pdb	--	--	-1.4767195e+03	2.7917014e+00	itn
n = 100	pdbAll	352	351	-9.2424096e+02	6.5184983e-07	
m = 200	pdProj	--	--	-5.3024674e+02	1.1151031e+00	itn
ROSEPETAL2	pdb	--	--	1.5620224e+03	1.3140492e+01	itn
n = 101	pdbAll	--	--	-2.4064250e+03	1.4936675e+01	itn
m = 201	pdProj	15	14	-9.2424100e+02	9.8187339e-05	
ROSZMAN1	pdb	58	56	0.0000000e+00	1.0236710e-02	stny
n = 4	pdbAll	58	56	0.0000000e+00	1.0236710e-02	stny
m = 25	pdProj	58	56	0.0000000e+00	1.0236710e-02	stny
RSNBRNE	pdb	33	10	0.0000000e+00	9.5216484e-05	
n = 2	pdbAll	33	10	0.0000000e+00	9.5216484e-05	
m = 2	pdProj	33	10	0.0000000e+00	9.5216484e-05	
S316	pdb	8	5	3.3430861e+02	3.2631096e-05	
-322 n	pdbAll	8	5	3.3430861e+02	3.2631096e-05	
m = 1	pdProj	8	5	3.3430861e+02	3.2631096e-05	
S365	pdb	8	5	3.3430861e+02	3.2631096e-05	
-322 n	pdbAll	8	5	3.3430861e+02	3.2631096e-05	
m = 1	pdProj	8	5	3.3430861e+02	3.2631096e-05	
S365MOD	pdb	--	--	6.0000000e+00	4.6753247e-01	a
n = 7	pdbAll	--	--	6.0000000e+00	4.6753247e-01	a
m = 5	pdProj	--	--	6.0000000e+00	4.6753247e-01	a
SANTA	pdb	61	58	0.0000000e+00	3.4723134e-02	stny
n = 21	pdbAll	66	55	0.0000000e+00	3.4723134e-02	stny
m = 23	pdProj	68	55	0.0000000e+00	3.2318116e-02	stny
SAWPATH	pdb	--	--	3.9400822e+02	6.9847071e-03	itn
n = 583	pdbAll	--	--	3.8489447e+02	7.2413043e-03	itn
m = 774	pdProj	2011	315	6.3858718e+02	1.0474978e-03	stny
SBRYBNDNE	pdb	--	--	0.0000000e+00	5.0000001e+00	ls
n = 500	pdbAll	--	--	0.0000000e+00	5.0000001e+00	ls
m = 500	pdProj	--	--	0.0000000e+00	5.0000001e+00	ls
SEMICN2U	pdb	102	51	0.0000000e+00	9.1929152e-05	
n = 502	pdbAll	102	51	0.0000000e+00	9.1929152e-05	
m = 500	pdProj	102	51	0.0000000e+00	9.1929152e-05	
SEMICON1	pdb	45	37	0.0000000e+00	3.6971929e-05	
n = 12	pdbAll	46	36	0.0000000e+00	8.3462045e-06	
m = 10	pdProj	34	14	0.0000000e+00	1.5659955e-05	
SEMICON2	pdb	31	25	0.0000000e+00	4.7277851e-05	
n = 12	pdbAll	28	22	0.0000000e+00	1.3381543e-06	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 10	pdProj	18	11	0.0000000e+00	3.2219539e-07	
SINROSNB	pdb	--	--	2.5811973e+03	3.2135124e-04	itn
n = 100	pdbAll	--	--	4.8057075e+03	7.7776209e-03	itn
m = 99	pdProj	146	88	4.0141476e+02	8.3800103e-09	
SINVALNE	pdb	23	9	0.0000000e+00	1.0002356e-07	
n = 2	pdbAll	23	9	0.0000000e+00	1.0002356e-07	
m = 2	pdProj	23	9	0.0000000e+00	1.0002356e-07	
SMMPSF	pdb	--	--	1.1286426e+04	2.0285054e-03	itn
n = 720	pdbAll	--	--	1.1319217e+04	2.0285277e-03	itn
m = 263	pdProj	2862	180	2.8928762e+06	9.9082132e-05	
SNAKE	pdb	--	--	-2.9989483e+02	6.3438534e-02	itn
n = 2	pdbAll	--	--	-6.8612536e+02	3.3034460e-01	itn
m = 2	pdProj	--	--	-9.0267087e+02	4.7952207e-02	itn
SPIN	pdb	684	97	0.0000000e+00	1.2035688e-05	
n = 497	pdbAll	684	97	0.0000000e+00	1.2035688e-05	
m = 495	pdProj	684	97	0.0000000e+00	1.2035688e-05	
SPIN2	pdb	5	4	0.0000000e+00	8.6771704e-05	
n = 102	pdbAll	5	4	0.0000000e+00	8.6771704e-05	
m = 100	pdProj	5	4	0.0000000e+00	8.6771704e-05	
SPIN2OP	pdb	25	10	3.0774612e-12	1.7152409e-05	
n = 102	pdbAll	25	10	3.0774612e-12	1.7152409e-05	
m = 100	pdProj	25	10	3.0774612e-12	1.7152409e-05	
SPINOP	pdb	3090	400	1.4477938e+01	9.9292172e-05	
n = 497	pdbAll	3090	400	1.4477938e+01	9.9292172e-05	
m = 495	pdProj	3265	398	1.4477111e+01	9.9679289e-05	
SPIRAL	pdb	122	85	-2.8638580e-07	3.0558180e-07	
n = 3	pdbAll	153	88	-2.8922314e-07	2.9379615e-07	
m = 2	pdProj	129	69	-1.0674800e-06	1.3783096e-05	
SPMSQRT	pdb	6	4	0.0000000e+00	1.2383310e-05	
n = 499	pdbAll	6	4	0.0000000e+00	1.2383310e-05	
m = 829	pdProj	6	4	0.0000000e+00	1.2383310e-05	
SREADIN3	pdb	289	86	-1.5262226e-01	6.2058209e-05	
n = 202	pdbAll	654	149	-1.5257243e-01	9.9563074e-05	
m = 101	pdProj	3642	319	-1.5260605e-01	9.5892738e-05	
SSBRYBNDNE	pdb	--	--	0.0000000e+00	5.0000001e+00	ls
n = 500	pdbAll	--	--	0.0000000e+00	5.0000001e+00	ls
m = 500	pdProj	--	--	0.0000000e+00	5.0000001e+00	ls
SSEBNLN	pdb	--	--	1.1521775e+07	2.3651677e+02	itn
n = 194	pdbAll	--	--	1.1522080e+07	2.3650061e+02	itn
m = 96	pdProj	230	44	2.0184555e+07	8.0247549e-06	
SSINE	pdb	--	--	0.0000000e+00	1.8993397e-03	itn
n = 3	pdbAll	--	--	0.0000000e+00	1.8993397e-03	itn
m = 2	pdProj	--	--	0.0000000e+00	1.9389702e-03	itn
SSNLBEAM	pdb	--	--	3.4358452e+02	8.4723392e-04	near

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 303	pdbAll	46	45	3.4773351e+02	3.6281633e-05	
m = 200	pdProj	75	67	3.3950734e+02	9.5202494e-05	
STEERING	pdb	31	30	5.5486262e-01	9.4476249e-05	
n = 506	pdbAll	28	27	5.5459532e-01	9.2577084e-07	
m = 400	pdProj	38	35	5.5459521e-01	2.4137625e-05	
STREGNE	pdb	42	41	1.0000000e+20	0.0000000e+00	
n = 4	pdbAll	42	41	1.0000000e+20	0.0000000e+00	
m = 2	pdProj	42	41	1.0000000e+20	0.0000000e+00	
STRTCHDVNE	pdb	106	85	0.0000000e+00	7.7100713e-09	
n = 1000	pdbAll	106	85	0.0000000e+00	7.7100713e-09	
m = 999	pdProj	106	85	0.0000000e+00	7.7100713e-09	
SVANBERG	pdb	20	19	1.6619719e+02	4.2069836e-05	
n = 100	pdbAll	20	19	1.6619720e+02	3.8757119e-05	
m = 100	pdProj	82	22	1.6619717e+02	9.2120397e-05	
SWOPF	pdb	68	40	6.7853806e-02	3.4830147e-05	
n = 83	pdbAll	68	37	6.7859827e-02	6.0089591e-06	
m = 92	pdProj	17	12	6.7859316e-02	5.5991938e-06	
SYNTHES1	pdb	27	26	7.5955317e-01	1.6288885e-05	
n = 6	pdbAll	25	24	7.5932396e-01	5.0164297e-05	
m = 6	pdProj	8	7	7.5928357e-01	2.6080679e-05	
SYNTHES2	pdb	84	83	-5.5337820e-01	2.7177363e-05	
n = 11	pdbAll	63	62	-5.5403524e-01	3.7523615e-05	
m = 14	pdProj	26	15	-5.5463885e-01	4.7081038e-05	
SYNTHES3	pdb	84	83	1.5102539e+01	6.5408141e-05	
n = 17	pdbAll	70	69	1.5090779e+01	2.8611122e-05	
m = 23	pdProj	14	13	1.5081991e+01	2.2185601e-05	
TAX13322	pdb	--	--	-3.7997228e+02	9.9829818e-05	itn
n = 72	pdbAll	350	349	-1.5972145e+03	7.1378633e-05	
m = 1261	pdProj	39	28	-1.9098178e+04	9.9982389e-05	
TAXR13322	pdb	--	--	-3.7997228e+02	9.9829818e-05	itn
n = 72	pdbAll	350	349	-1.5972145e+03	7.1378633e-05	
m = 1261	pdProj	39	28	-1.9098178e+04	9.9982389e-05	
TENBARS1	pdb	87	86	2.3025480e+03	5.7718937e-05	
n = 18	pdbAll	84	83	2.3025485e+03	1.8056080e-06	
m = 9	pdProj	--	--	3.3482851e+03	6.7778889e-05	itn
TENBARS2	pdb	176	175	2.3025484e+03	6.6253616e-05	
n = 18	pdbAll	172	171	2.3025485e+03	2.1329004e-10	
m = 8	pdProj	--	--	3.1563765e+03	1.0791691e-03	itn
TENBARS3	pdb	63	62	2.2471290e+03	2.7794822e-05	
n = 18	pdbAll	57	56	2.2471291e+03	6.3936222e-06	
m = 8	pdProj	763	93	2.2471291e+03	2.2918861e-08	
TENBARS4	pdb	66	65	3.6849316e+02	3.0305492e-05	
n = 18	pdbAll	62	61	3.6849316e+02	2.7344370e-06	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 9	pdProj	1242	174	3.6849316e+02	2.4240747e-05	
TFI1	pdb	--	--	2.8156110e+00	1.2559992e+01	itn
n = 3	pdbAll	--	--	2.8587904e+00	1.2578171e+01	itn
m = 101	pdProj	36	18	5.3346920e+00	7.5556550e-05	
THURBER	pdb	32	27	0.0000000e+00	3.4965721e+01	stny
n = 7	pdbAll	32	27	0.0000000e+00	3.4965721e+01	stny
m = 37	pdProj	44	30	0.0000000e+00	3.4965721e+01	stny
TRAINF	pdb	--	--	3.9347137e+00	4.3349938e-04	near
n = 808	pdbAll	417	416	3.2962373e+00	8.9500194e-05	
m = 402	pdProj	81	40	3.1151217e+00	8.7467455e-05	
TRAINH	pdb	--	--	1.2412773e+01	3.6654211e-04	near
n = 408	pdbAll	442	441	1.2317803e+01	7.4689678e-05	
m = 202	pdProj	583	153	1.2337567e+01	9.1155178e-05	
TRIGGER	pdb	11	10	0.0000000e+00	5.9042124e-05	
n = 7	pdbAll	11	10	0.0000000e+00	5.9042124e-05	
m = 6	pdProj	11	10	0.0000000e+00	5.9042124e-05	
TRIGON1NE	pdb	5	4	0.0000000e+00	1.2308514e-07	
n = 10	pdbAll	5	4	0.0000000e+00	1.2308514e-07	
m = 10	pdProj	5	4	0.0000000e+00	1.2308514e-07	
TRIGON2NE	pdb	25	23	0.0000000e+00	1.0000000e+00	stny
n = 10	pdbAll	25	23	0.0000000e+00	1.0000000e+00	stny
m = 31	pdProj	25	23	0.0000000e+00	1.0000000e+00	stny
TRIMLOSS	pdb	506	411	9.0694673e+00	9.9998116e-05	
n = 142	pdbAll	229	219	9.0669116e+00	7.0550168e-05	
m = 75	pdProj	6091	360	9.0601202e+00	6.8621537e-05	
TRO11X3	pdb	--	--	1.3540115e+01	1.4333412e-01	itn
n = 150	pdbAll	--	--	1.4796083e+01	1.4349468e-01	itn
m = 61	pdProj	--	--	8.6759212e+00	2.5770707e-01	itn
TRO21X5	pdb	--	--	2.3815122e+01	6.7335316e-02	itn
n = 540	pdbAll	--	--	2.3818260e+01	6.7166160e-02	itn
m = 201	pdProj	--	--	2.7244881e+01	5.3851107e-02	itn
TRO3X3	pdb	16	15	8.9994704e+00	6.8818012e-05	
n = 30	pdbAll	14	13	8.9992795e+00	3.0399871e-05	
m = 13	pdProj	84	34	8.9996131e+00	4.5488741e-05	
TRO4X4	pdb	20	19	8.9994301e+00	5.0218451e-05	
n = 63	pdbAll	19	18	9.0000564e+00	1.1276248e-06	
m = 25	pdProj	69	47	1.8942274e+01	8.4103700e-05	
TRO5X5	pdb	22	21	8.9993773e+00	4.9254294e-05	
n = 108	pdbAll	20	19	8.9988014e+00	7.1747748e-05	
m = 41	pdProj	127	72	2.0834483e+01	4.1468334e-05	
TRO6X2	pdb	--	--	-2.8798516e+08	9.0583508e-01	itn
n = 45	pdbAll	--	--	-7.1418233e+05	4.8793259e-02	itn
m = 21	pdProj	--	--	-9.3268455e+13	5.4756590e+01	itn
TRUSPYR1	pdb	53	52	1.1228740e+01	3.9915947e-05	

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 11	pdbAll	44	43	1.1228825e+01	1.8668613e-05	
m = 4	pdProj	31	13	1.1228716e+01	1.6373137e-06	
TRUSPYR2	pdb	60	59	1.1228742e+01	5.6752363e-05	
n = 11	pdbAll	54	53	1.1228747e+01	6.0465749e-06	
m = 11	pdProj	79	20	1.1228790e+01	5.7035485e-05	
TRY-B	pdb	17	16	2.9178223e-12	2.3439839e-05	
n = 2	pdbAll	14	12	9.6169027e-18	1.3426049e-05	
m = 1	pdProj	14	11	8.9311655e-14	9.7164806e-07	
TWIRIMD1	pdb	56	54	-1.0309622e+00	9.9333892e-05	
n = 1247	pdbAll	51	45	-1.0317636e+00	5.9517675e-05	
m = 712	pdProj	64	27	-1.0316829e+00	5.4197838e-06	
TWIRISM1	pdb	44	40	-1.0090571e+00	6.5465002e-05	
n = 343	pdbAll	41	34	-1.0088819e+00	8.4449951e-05	
m = 313	pdProj	74	33	-1.0089299e+00	8.8591173e-05	
TWOBARS	pdb	23	22	1.5086217e+00	2.0435108e-05	
n = 2	pdbAll	17	16	1.5085788e+00	5.0422455e-05	
m = 2	pdProj	10	9	1.5086515e+00	2.5703576e-05	
UBH5	pdb	20	19	1.1471040e+00	7.9106238e-05	
n = 110	pdbAll	18	17	1.1473496e+00	5.0075776e-07	
m = 70	pdProj	18	17	1.1473497e+00	4.7938613e-07	
VANDANIUMS	pdb	--	--	0.0000000e+00	1.4537974e+00	a
n = 22	pdbAll	--	--	0.0000000e+00	1.4537974e+00	a
m = 10	pdProj	--	--	0.0000000e+00	1.4537974e+00	itn
VANDERM1	pdb	76	62	0.0000000e+00	3.6769949e-07	
n = 100	pdbAll	47	44	0.0000000e+00	1.6551174e-06	
m = 199	pdProj	132	106	0.0000000e+00	4.3986170e-07	
VANDERM2	pdb	76	62	0.0000000e+00	3.6769949e-07	
n = 100	pdbAll	47	44	0.0000000e+00	1.6551174e-06	
m = 199	pdProj	132	106	0.0000000e+00	4.3986170e-07	
VANDERM3	pdb	77	63	0.0000000e+00	3.9931774e-08	
n = 100	pdbAll	53	42	0.0000000e+00	7.2399136e-07	
m = 199	pdProj	90	53	0.0000000e+00	1.7664505e-07	
VANDERM4	pdb	--	--	0.0000000e+00	4.0173451e+63	a
n = 100	pdbAll	--	--	0.0000000e+00	4.0173451e+63	a
m = 199	pdProj	--	--	0.0000000e+00	4.0173451e+63	ls
VARDIMNE	pdb	25	21	0.0000000e+00	5.4536332e-05	
n = 10	pdbAll	25	21	0.0000000e+00	5.4536332e-05	
m = 12	pdProj	25	21	0.0000000e+00	5.4536332e-05	
VESUVIA	pdb	134	104	0.0000000e+00	5.1186396e+00	stny
n = 8	pdbAll	134	104	0.0000000e+00	5.1186396e+00	stny
m = 1025	pdProj	134	104	0.0000000e+00	5.1186396e+00	stny
VESUVIO	pdb	122	102	0.0000000e+00	3.3910655e+00	stny
n = 8	pdbAll	122	102	0.0000000e+00	3.3910655e+00	stny

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 1025	pdProj	122	102	0.0000000e+00	3.3910655e+00	stny
VESUVIOU	pdb	159	122	0.0000000e+00	7.5428076e-02	stny
n = 8	pdbAll	159	122	0.0000000e+00	7.5428076e-02	stny
m = 1025	pdProj	162	125	0.0000000e+00	7.5428025e-02	stny
VIBRBEAMNE	pdb	47	38	0.0000000e+00	1.7320270e-01	stny
n = 8	pdbAll	47	38	0.0000000e+00	1.7320270e-01	stny
m = 30	pdProj	47	38	0.0000000e+00	1.7320270e-01	stny
WACHBIEG	pdb	48	47	1.0001072e+00	9.5895180e-05	
n = 3	pdbAll	48	47	1.0000244e+00	2.1968441e-05	
m = 2	pdProj	11	10	1.0000029e+00	6.5294327e-06	
WATSONNE	pdb	7	6	0.0000000e+00	9.3107308e-05	
n = 12	pdbAll	7	6	0.0000000e+00	9.3107308e-05	
m = 31	pdProj	7	6	0.0000000e+00	9.3107308e-05	
WAYSEA1NE	pdb	8	7	0.0000000e+00	2.5145123e-08	
n = 2	pdbAll	8	7	0.0000000e+00	2.5145123e-08	
m = 2	pdProj	8	7	0.0000000e+00	2.5145123e-08	
WAYSEA2NE	pdb	17	10	0.0000000e+00	8.6652094e-06	
n = 2	pdbAll	17	10	0.0000000e+00	8.6652094e-06	
m = 2	pdProj	17	10	0.0000000e+00	8.6652094e-06	
WEEDSNE	pdb	49	42	0.0000000e+00	1.1057284e+00	stny
n = 3	pdbAll	77	43	0.0000000e+00	1.1057284e+00	stny
m = 12	pdProj	83	53	0.0000000e+00	1.1057284e+00	stny
WOMFLET	pdb	24	19	-1.3437328e-07	1.3254752e-07	
n = 3	pdbAll	24	19	-9.3136888e-09	9.5761543e-09	
m = 3	pdProj	81	18	2.1031711e-08	2.4799199e-07	
WOODSNE	pdb	12	11	-1.4229000e+04	1.0000000e+00	stny
n = 1000	pdbAll	12	11	-1.4229000e+04	1.0000000e+00	stny
m = 751	pdProj	12	11	-1.4229000e+04	1.0000000e+00	stny
YATP1CNE	pdb	8	7	0.0000000e+00	4.1444038e-05	
n = 120	pdbAll	8	7	0.0000000e+00	4.1444038e-05	
m = 120	pdProj	8	7	0.0000000e+00	4.1444038e-05	
YATP1NE	pdb	8	7	0.0000000e+00	4.1444038e-05	
n = 120	pdbAll	8	7	0.0000000e+00	4.1444038e-05	
m = 120	pdProj	8	7	0.0000000e+00	4.1444038e-05	
YATP2CNE	pdb	21	8	0.0000000e+00	5.3633605e-06	
n = 120	pdbAll	21	8	0.0000000e+00	5.3633605e-06	
m = 120	pdProj	21	8	0.0000000e+00	2.2325973e-05	
YATP2SQ	pdb	24	8	0.0000000e+00	3.4576175e-08	
n = 120	pdbAll	24	8	0.0000000e+00	3.4576175e-08	
m = 120	pdProj	24	8	0.0000000e+00	3.4576175e-08	
YFITNE	pdb	32	30	0.0000000e+00	5.9555259e-05	
n = 3	pdbAll	32	30	0.0000000e+00	5.9555259e-05	
m = 17	pdProj	32	30	0.0000000e+00	5.9555259e-05	
YORKNET	pdb	--	--	1.0901475e+05	1.6122435e+03	ls

Table 6: Results on 648 CUTEst NC problems (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 312	pdbAll	455	454	1.3922895e+04	5.1905589e-05	
m = 256	pdProj	--	--	1.0665435e+05	5.6723064e+00	itn
ZAMB2	pdb	--	--	-3.9759426e+00	2.7169190e-03	itn
n = 1326	pdbAll	333	332	-4.1251365e+00	9.4496947e-05	
m = 480	pdProj	--	--	-4.0644846e+00	7.2840080e-04	near
ZAMB2-8	pdb	132	131	-1.5293460e-01	3.1566316e-05	
n = 138	pdbAll	88	87	-1.5227875e-01	1.0428911e-05	
m = 48	pdProj	87	29	-1.5293261e-01	4.0487518e-05	
ZAMB2-9	pdb	436	430	-3.5447863e-01	9.8087842e-05	
n = 138	pdbAll	143	141	-3.5245459e-01	3.6399283e-06	
m = 48	pdProj	50	24	-3.5445902e-01	9.6072688e-05	
ZAMB2-10	pdb	--	--	-1.5794102e+00	4.7776103e-04	near
n = 270	pdbAll	232	219	-1.5804742e+00	6.2931689e-05	
m = 96	pdProj	71	33	-1.5820487e+00	6.6726343e-05	
ZAMB2-11	pdb	467	464	-1.1161113e+00	6.3019539e-05	
n = 270	pdbAll	196	195	-1.1157737e+00	4.9851350e-05	
m = 96	pdProj	126	30	-1.1160774e+00	1.7792318e-05	
ZANGWIL3	pdb	2	1	0.0000000e+00	0.0000000e+00	
n = 3	pdbAll	2	1	0.0000000e+00	0.0000000e+00	
m = 3	pdProj	2	1	0.0000000e+00	0.0000000e+00	
ZECEVIC3	pdb	37	36	9.7308587e+01	5.2676628e-05	
n = 2	pdbAll	35	34	9.7308548e+01	5.5054772e-05	
m = 2	pdProj	17	9	9.7308655e+01	4.8214489e-05	
ZECEVIC4	pdb	44	43	7.5575122e+00	1.2152665e-06	
n = 2	pdbAll	43	42	7.5575584e+00	3.1083963e-05	
m = 2	pdProj	8	7	7.5574478e+00	3.0697908e-05	
ZIGZAG	pdb	--	--	2.4984699e+01	3.2019935e-01	itn
n = 304	pdbAll	--	--	2.4869368e+01	3.2914539e-01	itn
m = 250	pdProj	106	55	3.3844282e+01	6.8131755e-05	
ZY2	pdb	11	10	2.0002509e+00	5.4370177e-05	
n = 3	pdbAll	11	10	2.0001610e+00	3.7860522e-05	
m = 2	pdProj	11	6	2.0000000e+00	8.1257408e-06	

Table 7: Results on 141 CUTEst quadratic programming (QP) problems

Problem	Solver	Fe	Itn	Obj	Inf	Exit
AGG	pdb	--	--	-8.1181823e+06	2.7863009e-01	itn
n = 163	pdbAll	--	--	-1.0290330e+07	2.7747486e-01	itn
m = 488	pdProj	1025	84	-3.5998047e+07	9.9159768e-05	
AVGASA	pdb	40	39	-4.6319339e+00	2.8617445e-05	
n = 8	pdbAll	36	35	-4.6319039e+00	5.9584984e-05	
m = 10	pdProj	9	8	-4.6319255e+00	1.2861691e-09	
AVGASB	pdb	39	38	-4.4832567e+00	6.9947581e-05	
n = 8	pdbAll	34	33	-4.4832236e+00	2.7358568e-05	
m = 10	pdProj	9	8	-4.4832194e+00	2.8030285e-09	
BIGGSC4	pdb	67	66	-2.4499837e+01	3.9370404e-06	
n = 4	pdbAll	66	65	-2.4499956e+01	1.0467829e-07	
m = 7	pdProj	16	12	-2.4500001e+01	1.5820949e-08	
BLOCKQP1	pdb	13	12	5.1084595e+00	8.8479017e-08	
n = 210	pdbAll	12	11	5.1047468e+00	1.1910428e-09	
m = 101	pdProj	10	9	5.1078761e+00	2.5314676e-10	
BLOCKQP2	pdb	26	25	-9.3807592e+01	2.3841096e-05	
n = 210	pdbAll	26	25	-9.3807515e+01	1.4355417e-05	
m = 101	pdProj	18	12	-9.3805674e+01	7.0849615e-06	
BLOCKQP3	pdb	15	14	5.2313884e+00	7.5687038e-08	
n = 210	pdbAll	13	12	5.2629463e+00	7.9451639e-08	
m = 101	pdProj	12	11	5.2322089e+00	7.8683323e-08	
BLOCKQP4	pdb	28	27	-4.5776521e+01	2.8027419e-05	
n = 210	pdbAll	28	27	-4.5776435e+01	1.8807906e-05	
m = 101	pdProj	27	17	-4.5776193e+01	4.7815373e-08	
BLOCKQP5	pdb	15	14	5.2359175e+00	7.5785262e-08	
n = 210	pdbAll	13	12	5.2706511e+00	7.9626786e-08	
m = 101	pdProj	12	11	5.2335481e+00	7.8719600e-08	
BLOWEYA	pdb	54	53	-4.5529182e-01	5.3925684e-05	
n = 202	pdbAll	49	48	-4.5272574e-01	9.5453623e-05	
m = 102	pdProj	16	14	-4.2913203e-01	8.5490403e-06	
BLOWEYB	pdb	41	40	-3.0244123e-01	6.1592023e-05	
n = 202	pdbAll	37	36	-3.0411333e-01	2.7208874e-05	
m = 102	pdProj	15	14	-2.8654303e-01	9.6684842e-06	
BLOWEYC	pdb	49	48	-3.0440815e-01	8.9799848e-05	
n = 202	pdbAll	47	46	-3.0518259e-01	2.8926478e-05	
m = 102	pdProj	16	12	-2.8049475e-01	3.2844610e-05	
CVXQP1	pdb	21	20	1.1590773e+04	7.2292248e-05	
n = 100	pdbAll	21	20	1.1590767e+04	6.1709293e-05	
m = 50	pdProj	10	9	1.1590729e+04	5.2263867e-05	
CVXQP2	pdb	13	12	8.1210072e+03	9.3521460e-05	
n = 100	pdbAll	13	12	8.1210062e+03	9.2712362e-05	
m = 25	pdProj	6	5	8.1209514e+03	5.2182132e-05	

Table 7: Results on 141 CUTEst QPs (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
CVXQP3	pdb	35	34	1.1943375e+04	5.2196436e-05	
n = 100	pdbAll	38	33	1.1943344e+04	9.1575107e-05	
m = 75	pdProj	38	35	1.1943407e+04	2.5479920e-05	
DEGENLPA	pdb	34	33	-8.7848047e-04	6.5564264e-05	
n = 20	pdbAll	33	32	-9.4295556e-04	2.4203662e-05	
m = 15	pdProj	5	4	-4.4970348e-04	7.2102491e-05	
DEGENLPB	pdb	88	87	-7.0792190e+01	7.2075724e-05	
n = 20	pdbAll	87	86	-7.0792181e+01	7.2103299e-05	
m = 15	pdProj	71	11	-7.0792061e+01	7.2249601e-05	
DEGENQP	pdb	57	56	1.4802733e-03	8.8813290e-08	
n = 10	pdbAll	54	53	1.6936583e-03	1.0265268e-07	
m = 1005	pdProj	9	5	0.0000000e+00	0.0000000e+00	
DEGENQPC	pdb	62	61	1.8286395e-03	1.0697330e-06	
n = 10	pdbAll	55	54	1.1074656e-03	4.6809264e-07	
m = 125	pdProj	14	9	-5.5697071e-06	1.3686047e-05	
DTOC3	pdb	3	2	2.3426647e+02	1.6579996e-05	
n = 299	pdbAll	3	2	2.3426647e+02	1.6579996e-05	
m = 198	pdProj	3	2	2.3426647e+02	1.6579996e-05	
DUAL1	pdb	28	27	3.5011414e-02	4.0427632e-05	
n = 85	pdbAll	27	26	3.5012576e-02	9.2891587e-06	
m = 1	pdProj	7	6	3.5008579e-02	5.9866991e-05	
DUAL2	pdb	20	19	3.3732428e-02	3.4336177e-05	
n = 96	pdbAll	19	18	3.3733661e-02	3.2612464e-07	
m = 1	pdProj	6	5	3.3733592e-02	2.5279337e-06	
DUAL3	pdb	19	18	1.3575100e-01	3.2429850e-05	
n = 111	pdbAll	18	17	1.3575576e-01	1.8408727e-06	
m = 1	pdProj	6	5	1.3575417e-01	9.4949704e-06	
DUAL4	pdb	18	17	7.4600779e-01	9.7869515e-05	
n = 75	pdbAll	17	16	7.4602497e-01	7.7324872e-05	
m = 1	pdProj	7	6	7.4609028e-01	6.5420370e-07	
DUALC1	pdb	49	48	5.4565120e+03	3.7010706e-05	
n = 9	pdbAll	48	47	5.7932358e+03	1.8428483e-05	
m = 215	pdProj	160	22	7.9853457e+03	9.9659932e-05	
DUALC2	pdb	74	73	3.4111091e+03	7.1901240e-05	
n = 7	pdbAll	65	64	3.4121327e+03	6.8231679e-05	
m = 229	pdProj	313	35	3.5410680e+03	4.4079079e-06	
DUALC5	pdb	49	48	4.5554968e+02	9.6302598e-05	
n = 8	pdbAll	54	53	4.4258221e+02	5.3747377e-05	
m = 278	pdProj	56	10	4.2899492e+02	7.9999972e-05	
DUALC8	pdb	82	81	1.3873308e+04	8.3002672e-05	
n = 8	pdbAll	80	79	1.4111889e+04	7.7492675e-05	
m = 503	pdProj	276	35	1.8581280e+04	4.0359617e-06	
EXTRASIM	pdb	2	1	1.0000000e+00	0.0000000e+00	

Table 7: Results on 141 CUTEst QPs (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 2	pdbAll	2	1	1.0000000e+00	0.0000000e+00	
m = 1	pdProj	2	1	1.0000000e+00	0.0000000e+00	
FERRISDC	pdb	1	0	0.0000000e+00	0.0000000e+00	
n = 44	pdbAll	1	0	0.0000000e+00	0.0000000e+00	
m = 14	pdProj	1	0	0.0000000e+00	0.0000000e+00	
GENHS28	pdb	3	2	9.2717369e-01	3.7952124e-09	
n = 10	pdbAll	3	2	9.2717369e-01	3.7952124e-09	
m = 8	pdProj	3	2	9.2717369e-01	3.7952124e-09	
GMNCASE1	pdb	9	8	2.6517218e-01	5.5868317e-05	
n = 175	pdbAll	9	8	2.6557244e-01	4.5250168e-05	
m = 300	pdProj	34	33	2.6697317e-01	5.0537303e-05	
GMNCASE2	pdb	10	9	-9.9405310e-01	8.9283474e-06	
n = 175	pdbAll	10	9	-9.9403049e-01	2.3224118e-05	
m = 1050	pdProj	6	5	-9.9432951e-01	6.7340113e-05	
GMNCASE3	pdb	11	10	1.5196965e+00	3.4062640e-05	
n = 175	pdbAll	11	10	1.5209782e+00	2.5874782e-05	
m = 1050	pdProj	6	5	1.5251594e+00	5.6223121e-05	
GMNCASE4	pdb	314	313	5.9468842e+03	1.0831363e-07	
n = 175	pdbAll	287	286	5.9468838e+03	1.7369060e-07	
m = 350	pdProj	6	5	5.9468700e+03	2.9146116e-05	
GOFFIN	pdb	9	8	8.6064135e-02	4.7336381e-06	
n = 51	pdbAll	9	8	8.6022217e-02	4.5410044e-06	
m = 50	pdProj	18	10	-5.4471448e-10	5.7782882e-10	
GOULDQP1	pdb	118	117	-3.4852452e+03	1.1296668e-08	
n = 32	pdbAll	103	102	-3.4852046e+03	2.1820233e-08	
m = 17	pdProj	26	15	-3.4853331e+03	2.1382243e-07	
GRIDNETA	pdb	108	107	9.5241412e+01	4.8300552e-05	
n = 180	pdbAll	108	107	9.5241197e+01	6.2136912e-05	
m = 100	pdProj	10	9	9.5242509e+01	4.6119068e-05	
GRIDNETB	pdb	3	2	4.7268227e+01	2.6502649e-07	
n = 180	pdbAll	3	2	4.7268227e+01	2.6502649e-07	
m = 100	pdProj	3	2	4.7268227e+01	2.6502649e-07	
GRIDNETC	pdb	135	134	4.8352019e+01	3.4406346e-05	
n = 180	pdbAll	127	126	4.8352348e+01	5.2644670e-07	
m = 100	pdProj	7	6	4.8352350e+01	2.5904793e-05	
HATFLDH	pdb	36	35	-2.4499987e+01	2.5342367e-05	
n = 4	pdbAll	33	32	-2.4499964e+01	7.1314578e-05	
m = 7	pdProj	18	7	-2.4499627e+01	6.8619650e-06	
HIE1372D	pdb	--	--	2.4858316e+02	3.0359540e+01	ls
n = 637	pdbAll	109	108	2.7798711e+02	7.2960545e-06	
m = 525	pdProj	6	5	2.7798712e+02	5.9799479e-06	
HS21	pdb	17	16	-9.9960000e+01	4.5408250e-06	
n = 2	pdbAll	17	16	-9.9960000e+01	2.3571633e-06	

Table 7: Results on 141 CUTEst QPs (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 1	pdProj	4	3	-9.9960004e+01	7.8204606e-05	
HS35	pdb	10	9	1.1128385e-01	2.6997606e-07	
n = 3	pdbAll	10	9	1.1122245e-01	1.9646960e-07	
m = 1	pdProj	6	5	1.1111140e-01	1.9632392e-08	
HS35I	pdb	10	9	1.1124662e-01	2.5039471e-07	
n = 3	pdbAll	10	9	1.1119507e-01	1.7661377e-07	
m = 1	pdProj	6	5	1.1111166e-01	2.8988885e-08	
HS35MOD	pdb	12	11	2.5008190e-01	8.1283831e-07	
n = 3	pdbAll	11	10	2.5008352e-01	8.1008286e-07	
m = 1	pdProj	8	7	2.5002677e-01	4.5570724e-07	
HS44	pdb	44	43	-1.3000012e+01	7.8580974e-07	
n = 4	pdbAll	40	39	-1.3000001e+01	1.1303452e-07	
m = 6	pdProj	10	9	-1.4999933e+01	8.5574672e-07	
HS44NEW	pdb	15	14	-1.4999992e+01	6.2174109e-08	
n = 4	pdbAll	14	13	-1.4999975e+01	1.6990228e-07	
m = 6	pdProj	16	7	-1.5000000e+01	3.6778289e-11	
HS51	pdb	2	1	0.0000000e+00	0.0000000e+00	
n = 5	pdbAll	2	1	0.0000000e+00	0.0000000e+00	
m = 3	pdProj	2	1	0.0000000e+00	0.0000000e+00	
HS52	pdb	3	2	5.3266416e+00	5.8404263e-07	
n = 5	pdbAll	3	2	5.3266416e+00	5.8404263e-07	
m = 3	pdProj	3	2	5.3266416e+00	5.8404263e-07	
HS53	pdb	9	8	4.0928843e+00	6.7755640e-05	
n = 5	pdbAll	9	8	4.0930232e+00	2.3335990e-09	
m = 3	pdProj	4	3	4.0930243e+00	1.5198175e-07	
HS76	pdb	10	9	-4.6812405e+00	2.5377996e-07	
n = 4	pdbAll	10	9	-4.6813853e+00	2.0302763e-07	
m = 3	pdProj	6	5	-4.6818182e+00	6.0918031e-05	
HS76I	pdb	10	9	-4.6812505e+00	2.7534665e-07	
n = 4	pdbAll	10	9	-4.6813485e+00	2.3800974e-07	
m = 3	pdProj	6	5	-4.6818182e+00	6.0976537e-05	
HS118	pdb	25	24	6.6482149e+02	8.9593810e-07	
n = 15	pdbAll	25	24	6.6482087e+02	5.2077725e-07	
m = 17	pdProj	25	11	6.6482045e+02	1.5720882e-09	
HS268	pdb	36	35	6.0789043e-05	3.8136469e-09	
n = 5	pdbAll	25	24	1.6713046e-03	1.3638308e-08	
m = 5	pdProj	7	6	3.6289130e-06	2.5928728e-10	
HUES	pdb	57	56	3.4829821e+07	6.8162982e-05	
-MOD n = 10	pdbAll	52	51	3.4829825e+07	5.7173246e-06	
m = 2	pdProj	13	11	3.4829821e+07	1.8702377e-05	
HUESTIS	pdb	73	72	3.4829823e+09	2.6248499e-05	
n = 100	pdbAll	68	67	3.4829824e+09	1.1620892e-06	
m = 2	pdProj	15	14	3.4829820e+09	2.9485583e-05	
KSIP	pdb	6	5	2.5457988e+00	9.2173664e-09	

Table 7: Results on 141 CUTEst QPs (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 20	pdbAll	6	5	2.6690089e+00	8.5754293e-09	
m = 1001	pdProj	3	2	4.4826266e+00	7.7052117e-09	
LINSPANH	pdb	1	0	-7.7000000e+01	2.2737368e-13	
n = 97	pdbAll	1	0	-7.7000000e+01	2.2737368e-13	
m = 33	pdProj	1	0	-7.7000000e+01	2.2737368e-13	
LISWET1	pdb	26	25	1.0039003e+00	2.7462967e-05	
n = 403	pdbAll	22	21	1.0035807e+00	2.9902940e-05	
m = 400	pdProj	14	12	9.9890401e-01	5.0693286e-05	
LISWET2	pdb	26	25	1.0048551e+00	2.7462787e-05	
n = 403	pdbAll	22	21	1.0046033e+00	2.9903966e-05	
m = 400	pdProj	14	12	1.0018523e+00	5.0588613e-05	
LISWET3	pdb	26	25	1.0035763e+00	2.7462787e-05	
n = 403	pdbAll	22	21	1.0033942e+00	2.9903965e-05	
m = 400	pdProj	14	12	1.0018522e+00	5.0588450e-05	
LISWET4	pdb	26	25	1.0030244e+00	2.7465475e-05	
n = 403	pdbAll	22	21	1.0028724e+00	2.9888743e-05	
m = 400	pdProj	14	12	1.0018455e+00	5.2138963e-05	
LISWET5	pdb	31	30	1.0019069e+00	1.6535151e-05	
n = 403	pdbAll	26	25	1.0019207e+00	1.6526824e-05	
m = 400	pdProj	14	12	1.0018497e+00	5.1231413e-05	
LISWET6	pdb	30	29	1.0018918e+00	1.6642479e-05	
n = 403	pdbAll	26	25	1.0019218e+00	1.6549235e-05	
m = 400	pdProj	14	12	1.0018528e+00	5.0494605e-05	
LISWET7	pdb	26	25	1.0064153e+00	2.7473701e-05	
n = 403	pdbAll	22	21	1.0060794e+00	2.9825160e-05	
m = 400	pdProj	15	12	1.0017723e+00	6.3236461e-05	
LISWET8	pdb	26	25	1.0067087e+00	2.6841099e-05	
n = 403	pdbAll	22	21	1.0063903e+00	3.0454514e-05	
m = 400	pdProj	14	12	1.0020484e+00	3.1546053e-05	
LISWET9	pdb	173	172	1.9571497e+01	7.2673374e-05	
n = 102	pdbAll	143	142	1.9576603e+01	7.1572052e-05	
m = 100	pdProj	175	66	1.9798690e+01	7.4862836e-05	
LISWET10	pdb	30	29	1.0018906e+00	1.6604494e-05	
n = 403	pdbAll	26	25	1.0019206e+00	1.6511101e-05	
m = 400	pdProj	14	12	1.0018476e+00	5.1902620e-05	
LISWET11	pdb	30	29	1.0018918e+00	1.7196545e-05	
n = 403	pdbAll	26	25	1.0019218e+00	1.7105676e-05	
m = 400	pdProj	14	12	1.0018797e+00	3.9470607e-05	
LISWET12	pdb	29	28	1.0018778e+00	2.6540499e-05	
n = 403	pdbAll	25	24	1.0052290e+00	3.0777220e-05	
m = 400	pdProj	12	10	1.0013570e+00	6.2125779e-05	
MAKELA4	pdb	13	12	8.2620369e-04	2.8400288e-09	
n = 21	pdbAll	13	12	7.8596880e-04	1.6979892e-05	

Table 7: Results on 141 CUTEst QPs (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 40	pdProj	5	4	3.9350114e-05	5.7345447e-05	
MODEL	pdb	48	47	0.0000000e+00	8.3490050e-05	
n = 1542	pdbAll	37	36	0.0000000e+00	4.0481175e-07	
m = 38	pdProj	9	7	0.0000000e+00	5.4866209e-05	
MOSARQP1	pdb	11	10	-1.5413919e+02	2.6457045e-07	
n = 100	pdbAll	11	10	-1.5417401e+02	1.9641353e-07	
m = 10	pdProj	6	5	-1.5420010e+02	3.4953250e-07	
MOSARQP2	pdb	11	10	-2.0650020e+02	8.6446138e-08	
n = 100	pdbAll	10	9	-2.0647305e+02	2.0223886e-07	
m = 10	pdProj	4	3	-2.0648421e+02	7.4935269e-05	
NASH	pdb	19	18	0.0000000e+00	8.8128746e+00	stny
n = 72	pdbAll	9	8	0.0000000e+00	8.8128746e+00	stny
m = 24	pdProj	5	4	0.0000000e+00	8.8128746e+00	stny
NCVXQP1	pdb	--	--	-6.9370002e+05	2.3316601e-04	itn
n = 100	pdbAll	487	486	-7.2975422e+05	1.2249531e-05	
m = 50	pdProj	59	25	-7.2975372e+05	1.2688802e-06	
NCVXQP2	pdb	--	--	-5.3259740e+05	2.3520352e-04	itn
n = 100	pdbAll	--	--	-5.4018768e+05	9.0899227e-05	itn
m = 50	pdProj	34	27	-5.4468227e+05	1.7020233e-05	
NCVXQP3	pdb	--	--	-2.8874353e+05	5.4296204e-04	itn
n = 100	pdbAll	418	417	-2.9006039e+05	2.7578565e-05	
m = 50	pdProj	76	39	-2.8981959e+05	2.3316743e-07	
NCVXQP4	pdb	--	--	-8.5816331e+05	6.9985651e-04	itn
n = 100	pdbAll	--	--	-8.9281974e+05	7.6343517e-04	itn
m = 25	pdProj	94	41	-9.2153578e+05	1.1666946e-07	
NCVXQP5	pdb	--	--	-5.9470727e+05	9.8852144e-04	itn
n = 100	pdbAll	--	--	-6.1214666e+05	8.1444724e-04	itn
m = 25	pdProj	73	29	-6.3476366e+05	4.8082438e-05	
NCVXQP6	pdb	--	--	-3.1846142e+05	1.0460868e-03	itn
n = 100	pdbAll	480	475	-3.3289056e+05	1.8243602e-05	
m = 25	pdProj	47	42	-3.3289050e+05	3.6997615e-05	
NCVXQP7	pdb	343	335	-4.9111382e+05	9.2148108e-05	
n = 100	pdbAll	280	279	-4.9111510e+05	8.2507818e-05	
m = 75	pdProj	42	22	-4.9111149e+05	4.4242893e-06	
NCVXQP8	pdb	461	460	-3.4298514e+05	3.6122746e-05	
n = 100	pdbAll	353	352	-3.4298510e+05	3.7243163e-05	
m = 75	pdProj	45	25	-3.4298270e+05	1.5348789e-05	
NCVXQP9	pdb	384	373	-2.1120705e+05	9.0908573e-05	
n = 100	pdbAll	341	340	-2.1120730e+05	8.3303992e-05	
m = 75	pdProj	31	22	-2.1120630e+05	1.3676205e-05	
OET1	pdb	299	298	5.3818699e-01	2.8236688e-05	
n = 3	pdbAll	280	279	5.3818892e-01	2.8709454e-05	
m = 202	pdProj	--	--	5.4996874e-01	1.5439332e-03	itn
OET3	pdb	34	33	4.4821705e-03	3.4527035e-05	

Table 7: Results on 141 CUTEst QPs (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 4	pdbAll	32	31	4.4626218e-03	8.8028910e-05	
m = 202	pdProj	19	18	4.4969656e-03	1.5379179e-05	
PDE1	pdb	34	33	1.1015570e+00	8.2056813e-06	
n = 26	pdbAll	32	31	1.1015484e+00	2.3559550e-05	
m = 51	pdProj	8	7	1.1015623e+00	7.4521980e-05	
PDE2	pdb	24	23	9.0540568e+00	8.9295603e-05	
n = 40	pdbAll	22	21	9.0546888e+00	3.7854520e-08	
m = 51	pdProj	6	5	9.0546859e+00	2.5404820e-05	
PORTSNQP	pdb	22	21	3.3177845e+02	3.5812202e-05	
n = 1000	pdbAll	13	12	3.3186369e+02	2.5587545e-06	
m = 2	pdProj	4	3	3.3180005e+02	6.3661862e-05	
PORTSQP	pdb	14	13	3.3141652e+02	6.9477107e-05	
n = 1000	pdbAll	14	13	3.3141644e+02	1.5362381e-05	
m = 1	pdProj	6	5	3.3141826e+02	1.9370925e-07	
POWELL20	pdb	89	88	5.2702749e+04	6.0871387e-05	
n = 100	pdbAll	89	88	5.2702761e+04	5.8910753e-05	
m = 100	pdProj	42	23	5.2702970e+04	9.9840000e-05	
PRIMAL1	pdb	17	16	-3.3779219e-02	5.7609892e-07	
n = 325	pdbAll	13	12	-3.3452860e-02	6.1293962e-07	
m = 85	pdProj	9	8	-3.5012963e-02	6.0728037e-05	
PRIMAL2	pdb	17	16	-3.2382212e-02	3.0769646e-07	
n = 649	pdbAll	12	11	-3.1930542e-02	3.2964824e-07	
m = 96	pdProj	4	3	-3.3698078e-02	3.4402273e-05	
PRIMAL3	pdb	18	17	-1.1126862e-01	1.1862014e-06	
n = 745	pdbAll	12	11	-1.1181254e-01	8.7691570e-07	
m = 111	pdProj	14	11	-1.3575583e-01	9.9935747e-05	
PRIMAL4	pdb	22	21	-7.0998318e-01	5.8029136e-07	
n = 1489	pdbAll	14	13	-7.1497119e-01	4.3738348e-07	
m = 75	pdProj	21	8	-7.4609065e-01	5.3640233e-05	
PRIMALC1	pdb	48	47	-5.8187977e+03	2.4737231e-05	
n = 230	pdbAll	34	33	-5.9339398e+03	1.6651658e-05	
m = 9	pdProj	2	1	8.9857345e-04	2.6892267e-05	
PRIMALC2	pdb	53	52	-3.2561442e+03	2.1469139e-05	
n = 231	pdbAll	40	39	-3.3456377e+03	1.5756874e-05	
m = 7	pdProj	2	1	-1.9557512e-04	6.7355086e-05	
PRIMALC5	pdb	33	32	-3.8986750e+02	1.4784183e-05	
n = 287	pdbAll	22	21	-3.6472665e+02	1.9613527e-05	
m = 8	pdProj	2	1	-8.4058414e-05	5.4793630e-05	
PRIMALC8	pdb	110	109	-1.7818701e+04	6.9037489e-05	
n = 520	pdbAll	101	100	-1.7950690e+04	6.1865001e-05	
m = 8	pdProj	2	1	2.9346713e-03	2.7999825e-05	
PT	pdb	87	86	1.7838348e-01	8.6342262e-07	
n = 2	pdbAll	81	80	1.7837958e-01	1.0001307e-05	

Table 7: Results on 141 CUTEst QPs (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 101	pdProj	26	25	1.7838463e-01	1.0322662e-05	
QPCBLEND	pdb	22	21	-1.1930157e-02	4.2610862e-05	
n = 83	pdbAll	22	21	-1.1268020e-02	3.6737519e-05	
m = 74	pdProj	9	8	-8.2621469e-03	9.7655365e-05	
QPCBOEI2	pdb	--	--	1.0895861e+05	8.1088877e-02	itn
n = 143	pdbAll	--	--	1.0898644e+05	8.1087273e-02	itn
m = 166	pdProj	27	20	7.9821201e+06	9.6000000e-05	
QPNBLEND	pdb	21	20	-1.3351487e-02	4.3384477e-05	
n = 83	pdbAll	21	20	-1.2978492e-02	4.0183942e-05	
m = 74	pdProj	10	9	-1.1490232e-02	8.5700636e-05	
QPNBOEI1	pdb	--	--	5.2225148e+02	8.8973177e+00	itn
n = 384	pdbAll	--	--	5.2253662e+02	8.8972964e+00	itn
m = 351	pdProj	92	38	6.7311216e+06	9.9743429e-05	
QPNBOEI2	pdb	--	--	-1.7581434e+01	9.3856269e-02	itn
n = 143	pdbAll	--	--	-1.9765330e+00	9.3677263e-02	itn
m = 166	pdProj	36	23	1.4324863e+06	9.6000000e-05	
QPNSTAIR	pdb	--	--	1.1100735e+06	5.5339308e+00	itn
n = 467	pdbAll	--	--	1.1100734e+06	5.5339305e+00	itn
m = 356	pdProj	39	32	5.1460331e+06	9.6000000e-05	
READING2	pdb	1	0	0.0000000e+00	0.0000000e+00	
n = 303	pdbAll	1	0	0.0000000e+00	0.0000000e+00	
m = 200	pdProj	1	0	0.0000000e+00	0.0000000e+00	
RDW2D51F	pdb	7	6	1.1221179e-03	7.7613972e-05	
n = 578	pdbAll	7	6	1.1222939e-03	1.0081438e-10	
m = 225	pdProj	2	1	1.1211997e-03	3.8678916e-07	
RDW2D51U	pdb	2	1	8.3924280e-04	3.2089547e-07	
n = 578	pdbAll	2	1	8.3924280e-04	3.2089547e-07	
m = 225	pdProj	2	1	8.3924280e-04	3.2089547e-07	
RDW2D52B	pdb	3	2	1.1119053e-02	8.2577411e-05	
n = 578	pdbAll	3	2	1.1118963e-02	8.2439230e-05	
m = 225	pdProj	6	5	1.1087948e-02	3.9109297e-05	
RDW2D52F	pdb	3	2	1.1085516e-02	2.8277565e-05	
n = 578	pdbAll	3	2	1.1085488e-02	2.8209651e-05	
m = 225	pdProj	2	1	1.1073769e-02	1.3095108e-06	
RDW2D52U	pdb	2	1	1.0454949e-02	1.1561710e-06	
n = 578	pdbAll	2	1	1.0454949e-02	1.1561710e-06	
m = 225	pdProj	2	1	1.0454949e-02	1.1561710e-06	
S268	pdb	36	35	6.0789043e-05	3.8136469e-09	
n = 5	pdbAll	25	24	1.6713046e-03	1.3638308e-08	
m = 5	pdProj	7	6	3.6289130e-06	2.5928728e-10	
S277-280	pdb	55	54	5.0763017e+00	4.9556040e-05	
n = 4	pdbAll	50	49	5.0758755e+00	9.8187773e-05	
m = 4	pdProj	4	3	5.0761904e+00	9.4678253e-06	
SIMPLLPA	pdb	23	22	9.9998250e-01	2.8134926e-05	

Table 7: Results on 141 CUTEst QPs (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
n = 2	pdbAll	17	16	1.0000014e+00	9.2483513e-07	
m = 2	pdProj	6	4	1.0000000e+00	1.0644767e-08	
SIMPLLPB	pdb	34	33	1.0999839e+00	1.7414427e-05	
n = 2	pdbAll	26	25	1.1000002e+00	1.7131023e-07	
m = 3	pdProj	22	14	1.1000001e+00	5.1506053e-05	
SIPOW1	pdb	26	25	-1.0000853e+00	3.6257590e-05	
n = 2	pdbAll	26	25	-1.0000817e+00	3.1432381e-05	
m = 100	pdProj	125	86	-9.9997943e-01	1.8071486e-07	
SIPOW1M	pdb	29	28	-1.0005130e+00	4.8157127e-05	
n = 2	pdbAll	29	28	-1.0005141e+00	5.0216248e-05	
m = 100	pdProj	28	22	-1.0005024e+00	1.3999255e-05	
SIPOW2	pdb	31	30	-1.0019776e+00	4.1915081e-06	
n = 2	pdbAll	31	30	-1.0019772e+00	1.0529849e-06	
m = 100	pdProj	304	301	-1.0019788e+00	4.4355387e-06	
SIPOW2M	pdb	27	26	-1.0000071e+00	3.1115367e-06	
n = 2	pdbAll	27	26	-1.0000069e+00	3.0242771e-06	
m = 100	pdProj	58	48	-1.0000000e+00	4.8194966e-10	
SIPOW3	pdb	19	18	5.0396974e-01	2.0670759e-06	
n = 4	pdbAll	19	18	5.0397103e-01	9.9968029e-05	
m = 100	pdProj	9	8	5.0397248e-01	4.2377757e-05	
SIPOW4	pdb	18	17	2.6107909e-01	1.7971290e-05	
n = 4	pdbAll	18	17	2.6107983e-01	9.4772334e-05	
m = 100	pdProj	10	9	2.6110702e-01	4.1826678e-05	
SOSQP1	pdb	12	11	-1.7742990e-08	2.5077250e-05	
n = 200	pdbAll	9	8	-2.3214022e-08	3.9506189e-09	
m = 101	pdProj	3	2	-2.0609014e-03	4.1633671e-05	
SOSQP2	pdb	14	13	-4.8736980e+01	8.0739774e-05	
n = 200	pdbAll	14	13	-4.8737242e+01	2.4423289e-05	
m = 101	pdProj	8	7	-4.8737318e+01	1.3162810e-05	
SSEBLIN	pdb	--	--	1.2149697e+07	2.0332646e+02	itn
n = 194	pdbAll	--	--	1.2149705e+07	2.0332603e+02	itn
m = 72	pdProj	1993	99	1.6170600e+07	8.1430623e-10	
STATIC3	pdb	--	--	-9.9617612e+39	7.9379644e-03	itn
n = 434	pdbAll	--	--	-3.0968718e+40	2.3823567e-02	itn
m = 96	pdProj	--	--	-8.3652186e+44	3.6907305e+02	itn
STCQP1	pdb	14	13	4.0405145e+03	4.5985005e-05	
n = 257	pdbAll	14	13	4.0405145e+03	4.4909472e-05	
m = 128	pdProj	6	5	4.0408537e+03	8.4042300e-05	
STCQP2	pdb	11	10	1.4294680e+03	6.4005591e-05	
n = 257	pdbAll	11	10	1.4294635e+03	5.9267461e-05	
m = 128	pdProj	7	6	1.4294615e+03	5.0647017e-05	
STEENBRA	pdb	156	155	1.6957674e+04	2.4489800e-05	
n = 432	pdbAll	153	152	1.6957674e+04	4.2762952e-05	

Table 7: Results on 141 CUTEst QPs (continued)

Problem	Solver	Fe	Itn	Obj	Inf	Exit
m = 108	pdProj	243	41	1.6957675e+04	8.0000000e-05	
STNQP1	pdb	14	13	-4.4729819e+03	2.7202498e-05	
n = 257	pdbAll	14	13	-4.4729862e+03	2.0828561e-05	
m = 128	pdProj	6	5	-4.4728241e+03	1.6559975e-06	
STNQP2	pdb	14	13	-7.2319867e+03	2.3514902e-05	
n = 257	pdbAll	14	13	-7.2319888e+03	1.9898567e-05	
m = 128	pdProj	6	5	-7.2320005e+03	2.4879611e-06	
SUPERSIM	pdb	23	22	6.6664959e-01	5.1218063e-05	
n = 2	pdbAll	11	10	6.6666667e-01	6.0408301e-09	
m = 2	pdProj	4	3	6.6666667e-01	7.7557609e-09	
TAME	pdb	22	21	0.0000000e+00	6.7166332e-05	
n = 2	pdbAll	11	10	1.2325952e-32	8.1922290e-05	
m = 1	pdProj	4	3	0.0000000e+00	1.0493677e-08	
TARGUS	pdb	--	--	1.0748957e+03	2.6911533e+02	ls
n = 162	pdbAll	73	72	1.0837991e+03	7.3960813e-12	
m = 63	pdProj	12	11	1.0839997e+03	6.7540594e-06	
TFI2	pdb	35	34	6.4902794e-01	3.4625964e-06	
n = 3	pdbAll	33	32	6.4902621e-01	6.2467724e-06	
m = 101	pdProj	34	33	6.4902807e-01	1.2580761e-05	
TWOD	pdb	54	53	3.1871897e-03	4.3707890e-05	
n = 31	pdbAll	45	44	3.3295169e-03	8.3505664e-05	
m = 10	pdProj	10	7	6.4862918e-03	7.3974534e-06	
UBH1	pdb	24	23	1.1473519e+00	6.7019328e-05	
n = 99	pdbAll	19	18	1.1473520e+00	1.5097641e-08	
m = 60	pdProj	9	8	8.1610475e+00	2.9993914e-05	
WALL10	pdb	--	--	-4.5585861e+05	1.0694193e-07	ls
n = 1461	pdbAll	--	--	-4.5581414e+05	1.8120420e-07	ls
m = 0	pdProj	80	25	-4.5595378e+05	7.6307688e-06	
YAO	pdb	78	77	8.8668078e+00	9.6727722e-05	
n = 202	pdbAll	76	75	8.8745341e+00	9.6554386e-05	
m = 200	pdProj	412	194	9.9972356e+00	9.6761176e-05	
ZECEVIC2	pdb	23	22	-4.1249217e+00	7.3489007e-07	
n = 2	pdbAll	19	18	-4.1249723e+00	1.1505893e-06	
m = 2	pdProj	10	6	-4.1250000e+00	8.4282872e-05	

List of Tables

References

[1] I. Bongartz, A. R. Conn, N. I. M. Gould, and Ph. L. Toint. CUTE: Constrained and unconstrained testing environment. *ACM Trans. Math. Software*, 21(1):123–160, 1995. 5

[2] E. D. Dolan and J. J. Moré. Benchmarking optimization software with performance profiles. *Math. Program.*, 91(2, Ser. A):201–213, 2002. 6

[3] P. E. Gill, V. Kungurtsev, and D. P. Robinson. A shifted primal-dual penalty-barrier method for nonlinear optimization. *SIAM J. Optim.*, 30(2):1067–1093, 2020. 1, 4

[4] P. E. Gill, V. Kungurtsev, and D. P. Robinson. Line-search and trust-region equations for a primal-dual interior method for nonlinear optimization. Center for Computational Mathematics Report Technical Report CCoM-21-4, University of California, San Diego, 2021. 2

[5] P. E. Gill and M. Zhang. Equations for a projected-search path-following method for nonlinear optimization. Center for Computational Mathematics Report CCoM 22-02, Center for Computational Mathematics, University of California, San Diego, La Jolla, CA, 2022. 2

[6] P. E. Gill and M. Zhang. A projected-search path-following method for nonlinear optimization. Center for Computational Mathematics Report CCoM 22-01, Center for Computational Mathematics, University of California, San Diego, La Jolla, CA, 2022. 1, 2, 3

[7] N. I. M. Gould, D. Orban, and Ph. L. Toint. CUTEr and SifDec: A constrained and unconstrained testing environment, revisited. *ACM Trans. Math. Software*, 29(4):373–394, 2003. 5

[8] W. Hock and K. Schittkowski. *Test Examples for Nonlinear Programming Codes*. Lecture Notes in Econom. Math. Syst. 187. Springer-Verlag, Berlin, 1981. 5