NAME

cgdma − CUTEr CG_DESCENT test driver

SYNOPSIS

cgdma

DESCRIPTION

The *cgdma* main program test drives CG_DESCENT on SIF problems from the CUTEr distribution.

The CG_DESCENT package is a nonlinear conjugate-gradient method for large-scale unconstrained minimization designed by William Hager and Hongchao Zhang (U. Florida).

USAGE

The CG_DESCENT file cg_desecent.f should be compiled, and the resulting file cg_descent.o placed in (or symbolically linked to) the directory $MYCUTER/double/bin.

There is no single-precision version.

NOTE

If no CG_DESCENT.SPC file is present in the current directory, the default version is copied from $CUTER/common/src/pkg/cg_descent/. Default specifications are as follows:

1.0D-5	eps	The stopping tolerance
1.0D-1	delta	Wolfe line search parameter
9.0D-1	sigma	Wolfe line search parameter
1.0D-6	epsilon	approximate Wolfe threshold factor
5.0D-1	theta	update
6.6D-1	gamma	required decay factor in interval
5.0D+0	rho	growth factor in bracket
1.0D-2	eta	lower bound for cg's beta_k
1.0D-2	psi0	factor used in very initial starting guess
1.0D-1	psi1	factor previous step multiplied by in QuadStep
2.0D+0	psi2	factor previous step is multipled by for startup
1.0D-12	QuadCutOff	lower bound on rel change in f before QuadStep
1.0D+0	restart_fac	restart cg in restart_fac*n iterations
5.0D+2	maxit_fac	terminate in maxit_fac*n iterations
0.0D+0	feps	stop when value change <= feps*|f|
50	nexpand	number of grow/shrink allowed in bracket
50	nsecant	number of secant steps allowed in line search
T	QuadStep	use initial quad interpolation in line search
F	PrintLevel	F (no print) T (intermediate results)
F	PrintFinal	F (no print) T (print error messages, final error)
F	StopRule	F (|grad|_infty <= tol) T (... <= tol*(1+|f|))
F	ERule	F (eps_k = eps|f|) T (eps_k = eps)
T	AWolfe	F (Wolfe) T (+approx Wolfe) 2 (epsilon pert)
F	Step	F (no initial line search guess) T (guess in gnorm)

The reader is referred to the paper quoted below and the code itself if he or she wishes to modify these parameters.

ENVIRONMENT

CUTER

Parent directory for CUTEr

MYCUTER

Home directory of the installed CUTEr distribution.

AUTHORS

I. Bongartz, A.R. Conn, N.I.M. Gould, D. Orban and Ph.L. Toint

SEE ALSO

CUTEr (and SifDec): A Constrained and Unconstrained Testing Environment, revisited,
 N.I.M. Gould, D. Orban and Ph.L. Toint,
 ACM TOMS, **29**:4, pp.373-394, 2003.

CUTE: Constrained and Unconstrained Testing Environment, I. Bongartz, A.R. Conn, N.I.M. Gould and Ph.L. Toint, ACM TOMS, **21**:1, pp.123-160, 1995.

CG_DESCENT, A conjugate gradient method with guaranteed descent, W. W. Hager and H. Zhang, Department of Mathematics, University of Florida, Gainesville, FL 32611, USA, January, 2004.

sdcgd(1), cgd(1).