

cunmtr.f(3)

LAPACK

cunmtr.f(3)

NAME

cunmtr.f –

SYNOPSIS**Functions/Subroutines**subroutine **cunmtr** (SIDE, UPLO, TRANS, M, N, A, LDA, TAU, C, LDC, WORK, LWORK, INFO)**CUNMTR****Function/Subroutine Documentation**

subroutine **cunmtr** (character **SIDE**, character **UPLO**, character **TRANS**, integer **M**, integer **N**, complex, dimension(lda, *) **A**, integer **LDA**, complex, dimension(*) **TAU**, complex, dimension(ldc, *) **C**, integer **LDC**, complex, dimension(*) **WORK**, integer **LWORK**, integer **INFO**)
CUNMTR

Purpose:

CUNMTR overwrites the general complex M-by-N matrix C with

$$\begin{array}{ll} \text{SIDE} = \text{'L'} & \text{SIDE} = \text{'R'} \\ \text{TRANS} = \text{'N'}: & Q * C \quad C * Q \\ \text{TRANS} = \text{'C'}: & Q^{**H} * C \quad C * Q^{**H} \end{array}$$

where Q is a complex unitary matrix of order nq, with nq = m if SIDE = 'L' and nq = n if SIDE = 'R'. Q is defined as the product of nq-1 elementary reflectors, as returned by CHETRD:

if UPLO = 'U', $Q = H(nq-1) \dots H(2) H(1)$;

if UPLO = 'L', $Q = H(1) H(2) \dots H(nq-1)$.

Parameters:*SIDE*

SIDE is CHARACTER*1

= 'L': apply Q or Q**H from the Left;

= 'R': apply Q or Q**H from the Right.

UPLO

UPLO is CHARACTER*1

= 'U': Upper triangle of A contains elementary reflectors from CHETRD;

= 'L': Lower triangle of A contains elementary reflectors from CHETRD.

TRANS

TRANS is CHARACTER*1

= 'N': No transpose, apply Q;

= 'C': Conjugate transpose, apply Q**H.

M

M is INTEGER

The number of rows of the matrix C. $M \geq 0$.

N

N is INTEGER

The number of columns of the matrix C. $N \geq 0$.

A

A is COMPLEX array, dimension

(LDA,M) if SIDE = 'L'

(LDA,N) if SIDE = 'R'

The vectors which define the elementary reflectors, as



returned by CHETRD.

LDA

LDA is INTEGER

The leading dimension of the array A.

LDA $\geq \max(1, M)$ if SIDE = 'L'; LDA $\geq \max(1, N)$ if SIDE = 'R'.

TAU

TAU is COMPLEX array, dimension

(M-1) if SIDE = 'L'

(N-1) if SIDE = 'R'

TAU(i) must contain the scalar factor of the elementary reflector H(i), as returned by CHETRD.

C

C is COMPLEX array, dimension (LDC,N)

On entry, the M-by-N matrix C.

On exit, C is overwritten by Q^*C or Q^*H^*C or $C^*Q^{**}H$ or C^*Q .

LDC

LDC is INTEGER

The leading dimension of the array C. LDC $\geq \max(1, M)$.

WORK

WORK is COMPLEX array, dimension (MAX(1,LWORK))

On exit, if INFO = 0, WORK(1) returns the optimal LWORK.

LWORK

LWORK is INTEGER

The dimension of the array WORK.

If SIDE = 'L', LWORK $\geq \max(1, N)$;

if SIDE = 'R', LWORK $\geq \max(1, M)$.

For optimum performance LWORK $\geq N \cdot NB$ if SIDE = 'L', and LWORK $\geq M \cdot NB$ if SIDE = 'R', where NB is the optimal blocksize.

If LWORK = -1, then a workspace query is assumed; the routine only calculates the optimal size of the WORK array, returns this value as the first entry of the WORK array, and no error message related to LWORK is issued by XERBLA.

INFO

INFO is INTEGER

= 0: successful exit

< 0: if INFO = -i, the i-th argument had an illegal value

Author:

Univ. of Tennessee

Univ. of California Berkeley

Univ. of Colorado Denver

NAG Ltd.

Date:

November 2011

Definition at line 172 of file cunmtr.f.

Author

Generated automatically by Doxygen for LAPACK from the source code.

