NAME

cunmr3.f −

SYNOPSIS

Functions/Subroutines

subroutine **cunmr3** (SIDE, TRANS, M, N, K, L, A, LDA, TAU, C, LDC, WORK, INFO)

CUNMR3 *multiplies a general matrix by the unitary matrix from a RZ factorization determined by ctzrzf (unblocked algorithm).*

Function/Subroutine Documentation

subroutine cunmr3 (characterSIDE, characterTRANS, integerM, integerN, integerK, integerL, complex, dimension(lda, *)A, integerLDA, complex, dimension(*)TAU, complex, dimension(ldc, *)C, integerLDC, complex, dimension(*)WORK, integerINFO)

CUNMR3 multiplies a general matrix by the unitary matrix from a RZ factorization determined by ctzrzf (unblocked algorithm).

Purpose:

```
CUNMR3 overwrites the general complex m by n matrix C with

   Q * C  if SIDE = 'L' and TRANS = 'N', or

   Q**H* C  if SIDE = 'L' and TRANS = 'C', or

   C * Q  if SIDE = 'R' and TRANS = 'N', or

   C * Q**H if SIDE = 'R' and TRANS = 'C',

where Q is a complex unitary matrix defined as the product of k
elementary reflectors

   Q = H(1) H(2) . . . H(k)

as returned by CTZRZF. Q is of order m if SIDE = 'L' and of order n
if SIDE = 'R'.
```

Parameters:

SIDE

```
SIDE is CHARACTER*1
= 'L': apply Q or Q**H from the Left
= 'R': apply Q or Q**H from the Right
```

TRANS

```
TRANS is CHARACTER*1
= 'N': apply Q  (No transpose)
= 'C': apply Q**H (Conjugate transpose)
```

M

```
M is INTEGER
The number of rows of the matrix C. M >= 0.
```

N

```
N is INTEGER
The number of columns of the matrix C. N >= 0.
```

K

```
K is INTEGER
The number of elementary reflectors whose product defines
the matrix Q.
If SIDE = 'L', M >= K >= 0;
if SIDE = 'R', N >= K >= 0.
```

L

L is INTEGER
The number of columns of the matrix A containing
the meaningful part of the Householder reflectors.
If SIDE = 'L', M >= L >= 0, if SIDE = 'R', N >= L >= 0.

A

A is COMPLEX array, dimension
(LDA,M) if SIDE = 'L',
(LDA,N) if SIDE = 'R'
The i-th row must contain the vector which defines the
elementary reflector H(i), for i = 1,2,...,k, as returned by
CTZRZF in the last k rows of its array argument A.
A is modified by the routine but restored on exit.

LDA

LDA is INTEGER
The leading dimension of the array A. LDA >= max(1,K).

TAU

TAU is COMPLEX array, dimension (K)
TAU(i) must contain the scalar factor of the elementary
reflector H(i), as returned by CTZRZF.

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 >= max(1,M).

WORK

WORK is COMPLEX array, dimension
(N) if SIDE = 'L',
(M) if SIDE = 'R'

INFO

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

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Further Details:

Definition at line 178 of file cunmr3.f.

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