NAME

ctzrqf.f −

SYNOPSIS

Functions/Subroutines

subroutine **ctzrqf** (M, N, A, LDA, TAU, INFO)
CTZRQF

Function/Subroutine Documentation

subroutine ctzrqf (integerM, integerN, complex, dimension(lda, *)A, integerLDA, complex, dimension(*)TAU, integerINFO)

CTZRQF

Purpose:

```
This routine is deprecated and has been replaced by routine CTZRZF.

CTZRQF reduces the M-by-N ( M<=N ) complex upper trapezoidal matrix A
to upper triangular form by means of unitary transformations.

The upper trapezoidal matrix A is factored as

   A = ( R  0 ) * Z,

where Z is an N-by-N unitary matrix and R is an M-by-M upper
triangular matrix.
```

Parameters:

M

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

N

```
N is INTEGER
The number of columns of the matrix A.  N >= M.
```

A

```
A is COMPLEX array, dimension (LDA,N)
On entry, the leading M-by-N upper trapezoidal part of the
array A must contain the matrix to be factorized.
On exit, the leading M-by-M upper triangular part of A
contains the upper triangular matrix R, and elements M+1 to
N of the first M rows of A, with the array TAU, represent the
unitary matrix Z as a product of M elementary reflectors.
```

LDA

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

TAU

```
TAU is COMPLEX array, dimension (M)
The scalar factors of the elementary reflectors.
```

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:

```
The  factorization is obtained by Householder's method.  The kth
transformation matrix, Z( k ), whose conjugate transpose is used to
introduce zeros into the (m - k + 1)th row of A, is given in the form

   Z( k ) = ( I     0   ),
            ( 0  T( k ) )

where

   T( k ) = I - tau*u( k )*u( k )**H,   u( k ) = (   1    ),
                                                 (   0    )
                                                 ( z( k ) )

tau is a scalar and z( k ) is an ( n - m ) element vector.
tau and z( k ) are chosen to annihilate the elements of the kth row
of X.

The scalar tau is returned in the kth element of TAU and the vector
u( k ) in the kth row of A, such that the elements of z( k ) are
in  a( k, m + 1 ), ..., a( k, n ). The elements of R are returned in
the upper triangular part of A.

Z is given by

   Z =  Z( 1 ) * Z( 2 ) * ... * Z( m ).
```

Definition at line 139 of file ctzrqf.f.

Author

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