NAG Fortran Library Routine Document

F06SMF (ZGERU)

Note: before using this routine, please read the Users' Note for your implementation to check the interpretation of ***bold italicised*** terms and other implementation-dependent details.

1 Purpose

F06SMF (ZGERU) performs the rank-1 update operation

$$A \leftarrow \alpha x y^T + A,$$

where A is an m by n complex matrix, x is an m element complex vector, y is an n element complex vector, and α is a complex scalar.

2 Specification

```
SUBROUTINE F06SMF (M, N, ALPHA, X, INCX, Y, INCY, A, LDA)
INTEGER             M, N, INCX, INCY, LDA
complex*16          ALPHA, X(*), Y(*), A(LDA,*)
```

The routine may be called by its BLAS name ***zgeru***.

3 Description

None.

4 References

None.

5 Parameters

1: M – INTEGER *Input*

On entry: m, the number of rows of the matrix A.

Constraint: $\mathrm{M} \geq 0$.

2: N – INTEGER *Input*

On entry: n, the number of columns of the matrix A.

Constraint: $\mathrm{N} \geq 0$.

3: ALPHA – ***complex*16*** *Input*

On entry: the scalar α.

4: X$(*)$ – ***complex*16*** array *Input*

On entry: the vector x.

5: INCX – INTEGER *Input*

On entry: the increment in the subscripts of X between successive elements of x.

Constraint: $\mathrm{INCX} \neq 0$.

6: Y(∗) – ***complex*16*** array *Input*

On entry: the vector y.

7: INCY – INTEGER *Input*

On entry: the increment in the subscripts of Y between successive elements of y.

Constraint: INCY $\neq 0$.

8: A(LDA,∗) – ***complex*16*** array *Input/Output*

Note: the second dimension of the array A must be at least $\max(1, \mathrm{N})$.

On entry: the m by n matrix A.

On exit: the updated matrix A.

9: LDA – INTEGER *Input*

On entry: the first dimension of the array A as declared in the (sub)program from which F06SMF (ZGERU) is called.

Constraint: LDA $\geq \max(1, \mathrm{M})$.

6 Error Indicators and Warnings

None.