NAG Fortran Library Routine Document

F06SCF (ZHEMV)

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

F06SCF (ZHEMV) performs the matrix-vector operation

$$y \leftarrow \alpha Ax + \beta y$$

where A is an n by n complex Hermitian matrix, x and y are n element complex vectors, and α and β are complex scalars.

2 Specification

```
SUBROUTINE F06SCF (UPLO, N, ALPHA, A, LDA, X, INCX, BETA, Y, INCY)
INTEGER             N, LDA, INCX, INCY
complex*16          ALPHA, A(LDA,*), X(*), BETA, Y(*)
CHARACTER*1         UPLO
```

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

3 Description

None.

4 References

None.

5 Parameters

1: UPLO – CHARACTER*1 *Input*

On entry: specifies whether the upper or lower triangular part of A is stored as follows:

if UPLO = 'U', the upper triangular part of A is stored;
if UPLO = 'L', the lower triangular part of A is stored.

Constraint: UPLO = 'U' or 'L'.

2: N – INTEGER *Input*

On entry: n, the order of the matrix A.

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

3: ALPHA – ***complex*16*** *Input*

On entry: the scalar α.

4: A(LDA,$*$) – ***complex*16*** array *Input*

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

On entry: the n by n Hermitian matrix A. If UPLO = 'U', the upper triangle of A must be stored and the elements of the array below the diagonal are not referenced; if UPLO = 'L', the lower triangle of A must be stored and the elements of the array above the diagonal are not referenced.

5: LDA – INTEGER *Input*

On entry: the first dimension of the array A as declared in the (sub)program from which F06SCF (ZHEMV) is called.

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

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

On entry: the vector x.

7: INCX – INTEGER *Input*

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

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

8: BETA – ***complex*16*** *Input*

On entry: the scalar β.

9: Y$(*)$ – ***complex*16*** array *Input/Output*

On entry: the vector y. If $\mathrm{BETA} = 0$, Y need not be set.

On exit: the updated vector y.

10: INCY – INTEGER *Input*

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

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

6 Error Indicators and Warnings

None.