NAG Fortran Library Routine Document

F06TCF (ZSPMV)

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

F06TCF (ZSPMV) performs the matrix-vector operation

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

where A is an n by n complex symmetric matrix stored in packed form, x and y are n element complex vectors, and α and β are complex scalars.

2 Specification

```
SUBROUTINE F06TCF (UPLO, N, ALPHA, AP, X, INCX, BETA, Y, INCY)
INTEGER             N, INCX, INCY
complex*16          ALPHA, AP(*), X(*), BETA, Y(*)
CHARACTER*1         UPLO
```

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

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: AP$(*)$ – ***complex*16*** array *Input*

Note: the dimension of the array AP must be at least $\max(1, \mathrm{N} \times (\mathrm{N}+1)/2)$.

On entry: the n by n symmetric matrix A, packed by columns. More precisely, if UPLO = 'U', the upper triangle of A must be stored with element a_{ij} in $\mathrm{AP}(i + j(j-1)/2)$ for $i \leq j$;

if UPLO = 'L', the lower triangle of A must be stored with element a_{ij} in $\mathrm{AP}(i+(2n-j)(j-1)/2)$ for $i \geq j$.

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

On entry: the vector x.

6: INCX – INTEGER *Input*

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

Constraint: INCX $\neq 0$.

7: BETA – ***complex*16*** *Input*

On entry: the scalar β.

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

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

On exit: the updated vector y.

9: INCY – INTEGER *Input*

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

Constraint: INCY $\neq 0$.

6 Error Indicators and Warnings

None.