

NAG Fortran Library Routine Document

F06SEF (ZHPMV)

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

F06SEF (ZHPMV) performs the matrix-vector operation

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

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

2 Specification

```
SUBROUTINE F06SEF (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 *zhpmv*.

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: $N \geq 0$.
- 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 $\max(1, N \times (N + 1)/2)$.
On entry: the n by n Hermitian matrix A , packed by columns. More precisely, if UPLO = 'U', the upper triangle of A must be stored with element a_{ij} in $AP(i + j(j - 1)/2)$ for $i \leq j$; if

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

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|----|--|---------------------|
| 5: | <p>$X(*)$ – complex*16 array</p> <p><i>On entry:</i> the vector x.</p> | <i>Input</i> |
| 6: | <p>INCX – INTEGER</p> <p><i>On entry:</i> the increment in the subscripts of X between successive elements of x.</p> <p><i>Constraint:</i> $INCX \neq 0$.</p> | <i>Input</i> |
| 7: | <p>BETA – complex*16</p> <p><i>On entry:</i> the scalar β.</p> | <i>Input</i> |
| 8: | <p>$Y(*)$ – complex*16 array</p> <p><i>On entry:</i> the vector y. If BETA = 0, Y need not be set.</p> <p><i>On exit:</i> the updated vector y.</p> | <i>Input/Output</i> |
| 9: | <p>INCY – INTEGER</p> <p><i>On entry:</i> the increment in the subscripts of Y between successive elements of y.</p> <p><i>Constraint:</i> $INCY \neq 0$.</p> | <i>Input</i> |

6 Error Indicators and Warnings

None.
