NAG Library Routine Document

F06UPF

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

F06UPF returns, via the function name, the value of the 1-norm, the ∞-norm, the Frobenius norm, or the maximum absolute value of the elements of a complex n by n Hermitian tridiagonal matrix A.

2 Specification

```
FUNCTION F06UPF (NORM, N, D, E)
REAL (KIND=nag_wp) F06UPF
INTEGER                 N
REAL (KIND=nag_wp)      D(*)
COMPLEX (KIND=nag_wp)   E(*)
CHARACTER(1)            NORM
```

3 Description

None.

4 References

None.

5 Arguments

1: NORM – CHARACTER(1) *Input*

On entry: specifies the value to be returned.

NORM = '1' or 'O'
The 1-norm.

NORM = 'I'
The ∞-norm.

NORM = 'F' or 'E'
The Frobenius (or Euclidean) norm.

NORM = 'M'
The value $\max_{i,j} \left|a_{ij}\right|$ (not a norm).

Constraint: NORM = '1', 'O', 'I', 'F', 'E' or 'M'.

2: N – INTEGER *Input*

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

When N = 0, F06UPF returns zero.

Constraint: N $\geq$ 0.

3: D$(*)$ – REAL (KIND=nag_wp) array *Input*

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

On entry: the n diagonal elements of the tridiagonal matrix A.

4: E$(*)$ – COMPLEX (KIND=nag_wp) array *Input*

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

On entry: the $(n - 1)$ subdiagonal or superdiagonal elements of the tridiagonal matrix A.

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Parallelism and Performance

F06UPF is not threaded in any implementation.

9 Further Comments

None.

10 Example

None.