NAG Library Routine Document

F06HTF

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

F06HTF applies a complex elementary reflection to a complex vector.

2 Specification

```
SUBROUTINE F06HTF(N, DELTA, Y, INCY, THETA, Z, INCZ)
INTEGER           N, INCY, INCZ
complex*16        DELTA, Y(*), THETA, Z(*)
```

3 Description

F06FRF applies a complex elementary reflection (Householder matrix) P, as generated by F06HRF, to a given complex vector:

$$\begin{pmatrix} \delta \\ y \end{pmatrix} \leftarrow P \begin{pmatrix} \delta \\ y \end{pmatrix}$$

where y is an n element complex vector and δ is a complex scalar.

To apply the conjugate transpose matrix P^{H}, call F06HTF with $\bar{\theta}$ in place of θ.

4 References

None.

5 Parameters

1: N – INTEGER *Input*

On entry: n, the number of elements in y and z.

2: DELTA – ***complex*16*** *Input/Output*

On entry: the original scalar δ.

On exit: the transformed scalar δ.

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

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

On entry: the original vector y.

On exit: the transformed vector y.

4: INCY – INTEGER *Input*

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

5: THETA – ***complex*16*** *Input*

On entry: the value θ, as returned by F06HRF.

If $\theta = 0$, P is assumed to be the unit matrix and the transformation is skipped.

Constraint: if THETA ≤ 0, $n = 0$.

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

Note: the dimension of the array Z must be at least $\max(1, 1 + (\text{N} - 1)|\text{INCZ}|)$.

On entry: the vector z, as returned by F06HRF.

7: INCZ – INTEGER *Input*

On entry: the increment in the subscripts of Z between successive elements of z.

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Further Comments

None.

9 Example

None.