

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

F06HTF 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
<i>On entry:</i> n , the number of elements in y and z . | <i>Input</i> |
| 2: | DELTA – complex*16
<i>On entry:</i> the original scalar δ .
<i>On exit:</i> the transformed scalar δ . | <i>Input/Output</i> |
| 3: | Y(*) – complex*16 array
Note: the dimension of the array Y must be at least $\max(1, 1 + (N - 1) \text{INCY})$.
<i>On entry:</i> the original vector y .
<i>On exit:</i> the transformed vector y . | <i>Input/Output</i> |
| 4: | INCY – INTEGER
<i>On entry:</i> the increment in the subscripts of Y between successive elements of y . | <i>Input</i> |
| 5: | THETA – complex*16
<i>On entry:</i> the value θ , as returned by F06HRF. | <i>Input</i> |

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

Constraint: if $\text{THETA} \leq 0$, $n = 0$.

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

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

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.
