

NAG Library Routine Document

F06FUF

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

F06FUF applies a LINPACK (as opposed to NAG) style real elementary reflection to a real vector.

2 Specification

```
SUBROUTINE F06FUF(N, Z, INCZ, Z1, ALPHA, X, INCX)
INTEGER          N, INCZ, INCX
double precision Z(*), Z1, ALPHA, X(*)
```

3 Description

F06FUF applies a real elementary reflection (Householder matrix) P , as generated by F06FSF, to a given real vector:

$$\begin{pmatrix} \alpha \\ x \end{pmatrix} \leftarrow P \begin{pmatrix} \alpha \\ x \end{pmatrix}$$

where x is an n element real vector and α a real scalar.

4 References

None.

5 Parameters

- | | | |
|----|---|---------------------|
| 1: | N – INTEGER
<i>On entry:</i> n , the number of elements in x and z . | <i>Input</i> |
| 2: | $Z(*)$ – <i>double precision</i> array
Note: the dimension of the array Z must be at least $\max(1, 1 + (N - 1) \text{INCZ})$.
<i>On entry:</i> the vector z , as returned by F06FSF. | <i>Input</i> |
| 3: | INCZ – INTEGER
<i>On entry:</i> the increment in the subscripts of Z between successive elements of z . | <i>Input</i> |
| 4: | Z1 – <i>double precision</i>
<i>On entry:</i> the scalar ζ , as returned by F06FSF.
If $\zeta = 0$, P is assumed to be the unit matrix and the transformation is skipped. | <i>Input</i> |
| 5: | ALPHA – <i>double precision</i>
<i>On entry:</i> the original scalar α .
<i>On exit:</i> the transformed scalar α . | <i>Input/Output</i> |

6: $X(*)$ – *double precision* array *Input/Output*

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

On entry: the original vector x .

On exit: the transformed vector x .

7: INCX – INTEGER *Input*

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

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Further Comments

None.

9 Example

None.
