NAG Fortran 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 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.

2 Specification

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

3 Description

None.

4 References

None.

5 Parameters

1: N – INTEGER *Input*

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

2: Z$(*)$ – ***double precision*** array *Input*

On entry: the vector z, as returned by F06FSF.

3: INCZ – INTEGER *Input*

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

4: Z1 – ***double precision*** *Input*

On entry: the scalar ζ, as returned by F06FSF. If $\zeta = 0$, P is assumed to be the unit matrix and the transformation is skipped.

5: ALPHA – ***double precision*** *Input/Output*

On entry: the original scalar α.

On exit: the transformed scalar α.

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

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.