

NAG Library Routine Document

F06BEF

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

F06BEF generates a real Jacobi plane rotation.

2 Specification

```
SUBROUTINE F06BEF (JOB, X, Y, Z, C, S)
```

```
REAL (KIND=nag_wp) X, Y, Z, C, S
```

```
CHARACTER(1)      JOB
```

3 Description

F06BEF generates a real Jacobi plane rotation with parameters c and s , which diagonalizes a given 2 by 2 real symmetric matrix:

$$\begin{pmatrix} c & s \\ -s & c \end{pmatrix} \begin{pmatrix} x & y \\ y & z \end{pmatrix} \begin{pmatrix} c & -s \\ s & c \end{pmatrix} = \begin{pmatrix} a & 0 \\ 0 & b \end{pmatrix}.$$

4 References

None.

5 Parameters

- 1: JOB – CHARACTER(1) *Input*
On entry: specifies the property which determines the precise form of the rotation.
 JOB = 'B'
 $c \geq 1/\sqrt{2}$.
 JOB = 'S'
 $0 \leq c \leq 1/\sqrt{2}$.
 JOB = 'M'
 $|a| \geq |b|$.
Constraint: JOB = 'B', 'S' or 'M'.
- 2: X – REAL (KIND=nag_wp) *Input/Output*
On entry: the value x , the (1, 1) element of the input matrix.
On exit: the value a .
- 3: Y – REAL (KIND=nag_wp) *Input/Output*
On entry: the value y , the (1, 2) or (2, 1) element of the input matrix.
On exit: the value t , the tangent of the rotation.

- 4: Z – REAL (KIND=nag_wp) *Input/Output*
On entry: the value z , the (2,2) element of the input matrix.
On exit: the value b .
- 5: C – REAL (KIND=nag_wp) *Output*
On exit: the value c , the cosine of the rotation.
- 6: S – REAL (KIND=nag_wp) *Output*
On exit: the value s , the sine of the rotation.

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Further Comments

None.

9 Example

None.
