

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

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

2 Specification

```
SUBROUTINE F06BEF (JOB, X, Y, Z, C, S)
  double precision X, Y, Z, C, S
  CHARACTER*1      JOB
```

3 Description

None.

4 References

None.

5 Parameters

- 1: JOB – CHARACTER*1 *Input*
On entry: specifies the property which determines the precise form of the rotation:
 if JOB = 'B', $c \geq 1/\sqrt{2}$;
 if JOB = 'S', $0 \leq c \leq 1/\sqrt{2}$;
 if JOB = 'M', $|a| \geq |b|$.
Constraint: JOB = 'B', 'S' or 'M'.
- 2: X – *double precision* *Input/Output*
On entry: the value x , the (1,1) element of the input matrix.
On exit: the value a .
- 3: Y – *double precision* *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 – *double precision* *Input/Output*
On entry: the value z . the (2,2) element of the input matrix.
On exit: the value b .

