

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 Arguments

- | | | |
|----|--|---------------------|
| 1: | JOB – CHARACTER(1) | <i>Input</i> |
| | <i>On entry:</i> 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 $. | |
| | <i>Constraint:</i> JOB = 'B', 'S' or 'M'. | |
| 2: | X – REAL (KIND=nag_wp) | <i>Input/Output</i> |
| | <i>On entry:</i> the value x , the (1,1) element of the input matrix. | |
| | <i>On exit:</i> the value a . | |
| 3: | Y – REAL (KIND=nag_wp) | <i>Input/Output</i> |
| | <i>On entry:</i> the value y , the (1,2) or (2,1) element of the input matrix. | |
| | <i>On exit:</i> the value t , the tangent of the rotation. | |
| 4: | Z – REAL (KIND=nag_wp) | <i>Input/Output</i> |
| | <i>On entry:</i> 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 Parallelism and Performance

F06BEF is not threaded in any implementation.

9 Further Comments

None.

10 Example

None.
