

NAG Library Routine Document

F06BCF

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

F06BCF reconstructs the parameters c and s of a real plane rotation from the tangent of that rotation.

2 Specification

```
SUBROUTINE F06BCF(T, C, S)
  double precision    T, C, S
```

3 Description

F06BCF reconstructs the parameters c and s of a real plane rotation from the value of the tangent t , as returned by F06BAF:

$$c = \frac{1}{\sqrt{1+t^2}}, \quad s = ct,$$

so that $c \geq 0$ and s has the same sign as t .

If $|t| < \sqrt{\epsilon}$, where ϵ is the ***machine precision***, the routine sets $c = 1$ and $s = t$; if $|t| > 1/\sqrt{\epsilon}$, the routine sets $c = \frac{1}{|t|}$ and $s = \text{sign } t$.

4 References

None.

5 Parameters

- | | | |
|----|---|---------------|
| 1: | T – <i>double precision</i>
<i>On entry:</i> the value t , the tangent of the rotation. | <i>Input</i> |
| 2: | C – <i>double precision</i>
<i>On exit:</i> the value c , the cosine of the rotation. | <i>Output</i> |
| 3: | S – <i>double precision</i>
<i>On exit:</i> the value s , the sine of the rotation. | <i>Output</i> |

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Further Comments

None.

9 Example

None.
