

NAG Library Routine Document

F06CDF

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

F06CDF reconstructs the parameters c (complex) and s (real) of a complex plane rotation from the tangent of that rotation.

2 Specification

```
SUBROUTINE F06CDF (T, C, S)
```

```
REAL (KIND=nag_wp) S
```

```
COMPLEX (KIND=nag_wp) T, C
```

3 Description

F06CDF reconstructs the parameters c (complex) and s (real) of a complex plane rotation, from the value of the tangent t , as returned by F06CBF:

$$c = \frac{\text{sign}(\text{Re}(t))|t|}{t\sqrt{1+|t|^2}}, \quad s = ct.$$

If $|t| < \sqrt{\epsilon}$, where ϵ is the *machine precision*, the routine sets:

$$c = \frac{\text{sign}(\text{Re}(t))|t|}{t}, \quad s = \text{sign}(\text{Re}(t))|t|.$$

4 References

None.

5 Parameters

- | | | |
|----|---|---------------|
| 1: | T – COMPLEX (KIND=nag_wp) | <i>Input</i> |
| | <i>On entry:</i> the value t , the tangent of the rotation. | |
| 2: | C – COMPLEX (KIND=nag_wp) | <i>Output</i> |
| | <i>On exit:</i> the value c , the cosine of the rotation. | |
| 3: | S – REAL (KIND=nag_wp) | <i>Output</i> |
| | <i>On exit:</i> 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.
