

NAG Library Routine Document

F06EXF (DROTI)

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

F06EXF (DROTI) applies a real plane rotation to a sparse real vector and a real vector.

2 Specification

```
SUBROUTINE F06EXF(NZ, X, INDX, Y, C, S)
  INTEGER          NZ, INDX(*)
  double precision X(*), Y(*), C, S
```

The routine may be called by its BLAS name ***droti***.

3 Description

F06EXF (DROTI) applies a real plane rotation to a sparse real vector x stored in compressed form and a real vector y in full storage form:

$$\begin{pmatrix} x^T \\ y^T \end{pmatrix} \leftarrow \begin{pmatrix} c & s \\ -s & c \end{pmatrix} \begin{pmatrix} x^T \\ y^T \end{pmatrix}.$$

The plane rotation has the form generated by F06AAF (DROTG) or F06BAF.

4 References

None.

5 Parameters

- | | | |
|----|--|---------------------|
| 1: | NZ – INTEGER | <i>Input</i> |
| | <i>On entry:</i> the number of elements in the compressed vector x . | |
| 2: | X(*) – <i>double precision</i> array | <i>Input/Output</i> |
| | Note: the dimension of the array X must be at least $\max(1, \text{NZ})$. | |
| | <i>On entry:</i> the compressed vector x . | |
| | <i>On exit:</i> the transformed vector x . | |
| 3: | INDX(*) – INTEGER array | <i>Input</i> |
| | Note: the dimension of the array INDX must be at least $\max(1, \text{NZ})$. | |
| | <i>On entry:</i> the indices of the elements in the compressed vector x . | |
| | <i>Constraint:</i> the indices must be distinct. | |
| 4: | Y(*) – <i>double precision</i> array | <i>Input/Output</i> |
| | Note: the dimension of the array Y must be at least $\max_k(\text{INDX}(k))$. | |
| | <i>On entry:</i> the vector y . | |
| | <i>On exit:</i> the transformed vector y . Only elements corresponding to indices in INDX are altered. | |

- 5: **C – *double precision*** *Input*
 On entry: the value c , the cosine of the rotation.
- 6: **S – *double precision*** *Input*
 On entry: 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.
