

# NAG Library Routine Document

## F06EJF (DNRM2)

**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

F06EJF (DNRM2) returns the Euclidean norm of the  $n$ -element real vector  $x$ .

### 2 Specification

```
FUNCTION F06EJF (N, X, INCX)
  REAL (KIND=nag_wp) F06EJF
  INTEGER              N, INCX
  REAL (KIND=nag_wp) X(*)
```

The routine may be called by its BLAS name *dnrm2*.

### 3 Description

F06EJF (DNRM2) returns, via the function name, the Euclidean norm

$$\|x\|_2 = \sqrt{x^T x}$$

of the  $n$ -element real vector  $x$  scattered with stride INCX.

### 4 References

Lawson C L, Hanson R J, Kincaid D R and Krogh F T (1979) Basic linear algebra subprograms for Fortran usage *ACM Trans. Math. Software* **5** 308–325

### 5 Arguments

- 1: N – INTEGER *Input*  
*On entry:*  $n$ , the number of elements in  $x$ .
- 2: X(\*) – REAL (KIND=nag\_wp) array *Input*  
**Note:** the dimension of the array X must be at least  $\max(1, 1 + (N - 1) \times \text{INCX})$ .  
*On entry:* the  $n$ -element vector  $x$ .  $x_i$  must be stored in  $X(1 + (i - 1) \times \text{INCX})$ , for  $i = 1, 2, \dots, N$ .  
 Intermediate elements of X are not referenced.
- 3: INCX – INTEGER *Input*  
*On entry:* the increment in the subscripts of X between successive elements of  $x$ .  
*Constraint:*  $\text{INCX} > 0$ .

### 6 Error Indicators and Warnings

None.

**7 Accuracy**

Not applicable.

**8 Parallelism and Performance**

F06EJF (DNRM2) is not threaded in any implementation.

**9 Further Comments**

None.

**10 Example**

None.

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