

# NAG Library Routine Document

## F06KLF

**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

F06KLF determines the index of the first negligible element of a real vector.

### 2 Specification

```
FUNCTION F06KLF (N, X, INCX, TOL)
  INTEGER F06KLF
  INTEGER          N, INCX
  REAL (KIND=nag_wp) X(*), TOL
```

### 3 Description

F06KLF finds the first element of the  $n$ -element real vector  $x$  for which

$$|x_{k+1}| \leq tol \max(|x_1|, \dots, |x_k|)$$

and returns the index  $k$  via the function name. If no such  $k$  exists, then the value  $n$  is returned. If a negative value of  $tol$  is supplied, the value of *machine precision* is used in place of  $tol$ .

### 4 References

None.

### 5 Parameters

- 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  $\max(1, 1 + (N - 1) \times INCX)$ .  
*On entry:* the  $n$ -element vector  $x$ .  $x_i$  must be stored in  $X(1 + (i - 1) \times INCX)$ , 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:*  $INCX > 0$ .
- 4: TOL – REAL (KIND=nag\_wp) *Input*  
*On entry:* the value  $tol$ .

### 6 Error Indicators and Warnings

None.

**7 Accuracy**

Not applicable.

**8 Parallelism and Performance**

Not applicable.

**9 Further Comments**

None.

**10 Example**

None.

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