NAG C Library Function Document

nag_daxpby (f16ecc)

1 Purpose

nag_daxpby (f16ecc) performs the operation

\[ y \leftarrow \alpha x + \beta y. \]

2 Specification

void nag_daxpby (Integer n, double alpha, const double x[], Integer incx,
                double beta, double y[], Integer incy, NagError *fail)

3 Description

nag_daxpby (f16ecc) performs the operation

\[ y \leftarrow \alpha x + \beta y \]

where \( x \) and \( y \) are \( n \) element real vectors, and \( \alpha \) and \( \beta \) real scalars. If \( n \) is equal to zero, or if \( \alpha \) is equal to zero and \( \beta \) is equal to one, this function returns immediately.

4 References


5 Parameters

1: \( n \) – Integer  \hspace{1cm} Input

On entry: \( n \), the number of elements in \( x \) and \( y \).

Constraint: \( n \geq 0 \).

2: \( \alpha \) – double  \hspace{1cm} Input

On entry: the scalar \( \alpha \).

3: \( x[\text{dim}] \) – const double  \hspace{1cm} Input

Note: the dimension, \( \text{dim} \), of the array \( x \) must be at least \( 1 + (n - 1)\mid \text{incx} \mid \).

On entry: the vector \( x \).

4: \( \text{incx} \) – Integer  \hspace{1cm} Input

On entry: the increment in the subscripts of \( x \) between successive elements of \( x \).

Constraint: \( \text{incx} \neq 0 \).

5: \( \beta \) – double  \hspace{1cm} Input

On entry: the scalar \( \beta \).

6: \( y[\text{dim}] \) – double  \hspace{1cm} Input/Output

Note: the dimension, \( \text{dim} \), of the array \( y \) must be at least \( 1 + (n - 1)\mid \text{incy} \mid \).

On entry: the vector \( y \).

On exit: the updated vector \( y \).
7: \texttt{incy} – Integer \hspace{1cm} \textit{Input}

\textit{On entry:} the increment in the subscripts of \(y\) between successive elements of \(y\).

\textit{Constraint:} \(\texttt{incy} \neq 0\).

8: \texttt{fail} – NagError * \hspace{1cm} \textit{Input/Output}

The NAG error parameter (see the Essential Introduction).

6 \hfill \textbf{Error Indicators and Warnings}

\textbf{NE\_INT}

On entry, \(n = <\text{value}>\).

Constraint: \(n \geq 0\).

On entry, \(\texttt{incx} = <\text{value}>\).

Constraint: \(\texttt{incx} \neq 0\).

On entry, \(\texttt{incy} = <\text{value}>\).

Constraint: \(\texttt{incy} \neq 0\).

\textbf{NE\_BAD\_PARAM}

On entry, parameter \(<\text{value}>\) had an illegal value.

7 \hfill \textbf{Accuracy}

The BLAS standard requires accurate implementations which avoid unnecessary over/underflow (see section 2.7 of The BLAS Technical Forum Standard (2001)).

8 \hfill \textbf{Further Comments}

None.

9 \hfill \textbf{Example}

None.