

NAG C Library Function Document

nag_daxpby (f16ecc)

1 Purpose

nag_daxpby (f16ecc) performs the operation

$$y \leftarrow \alpha x + \beta y.$$

2 Specification

```
#include <nag.h>
#include <nagf16.h>
```

```
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 α and β real scalars. If n is equal to zero, or if α is equal to zero and β is equal to one, this function returns immediately.

4 References

The BLAS Technical Forum Standard (2001) www.netlib.org/blas/blast-forum

5 Arguments

- | | | |
|----|---|---------------------|
| 1: | n – Integer | <i>Input</i> |
| | <i>On entry:</i> n , the number of elements in x and y . | |
| | <i>Constraint:</i> $n \geq 0$. | |
| 2: | alpha – double | <i>Input</i> |
| | <i>On entry:</i> the scalar α . | |
| 3: | x [<i>dim</i>] – const double | <i>Input</i> |
| | Note: the dimension, <i>dim</i> , of the array x must be at least $\max(1, 1 + (n - 1) \mathbf{incx})$. | |
| | <i>On entry:</i> the vector x . | |
| 4: | incx – Integer | <i>Input</i> |
| | <i>On entry:</i> the increment in the subscripts of x between successive elements of x . | |
| | <i>Constraint:</i> $\mathbf{incx} \neq 0$. | |
| 5: | beta – double | <i>Input</i> |
| | <i>On entry:</i> the scalar β . | |
| 6: | y [<i>dim</i>] – double | <i>Input/Output</i> |
| | Note: the dimension, <i>dim</i> , of the array y must be at least $\max(1, 1 + (n - 1) \mathbf{incy})$. | |

On entry: the vector y .

On exit: the updated vector y .

7: **incy** – Integer

Input

On entry: the increment in the subscripts of y between successive elements of y .

Constraint: **incy** $\neq 0$.

8: **fail** – NagError *

Input/Output

The NAG error argument (see Section 2.6 of the Essential Introduction).

6 Error Indicators and Warnings

NE_BAD_PARAM

On entry, argument $\langle value \rangle$ had an illegal value.

NE_INT

On entry, **incx** = $\langle value \rangle$.

Constraint: **incx** $\neq 0$.

On entry, **incy** = $\langle value \rangle$.

Constraint: **incy** $\neq 0$.

On entry, **n** = $\langle value \rangle$.

Constraint: **n** ≥ 0 .

7 Accuracy

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

8 Further Comments

None.

9 Example

See Section 9 of the documents for nag_real_banded_sparse_eigensystem_sol (f12agc) and nag_real_symm_banded_sparse_eigensystem_sol (f12fgc).
