

NAG Library Routine Document

F06GAF (ZDOTU)

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

F06GAF (ZDOTU) computes the scalar product of two complex vectors.

2 Specification

```
FUNCTION F06GAF (N, X, INCX, Y, INCY)
  COMPLEX (KIND=nag_wp) F06GAF
  INTEGER          N, INCX, INCY
  COMPLEX (KIND=nag_wp) X(*), Y(*)
```

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

3 Description

F06GAF (ZDOTU) returns, via the function name, the value of the scalar product

$$x^T y$$

where x and y are n -element complex vectors scattered with stride INCX and INCY respectively.

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 | <i>Input</i> |
| | <i>On entry:</i> n , the number of elements in x and y . | |
| 2: | X(*) – COMPLEX (KIND=nag_wp) array | <i>Input</i> |
| | Note: the dimension of the array X must be at least $\max(1, 1 + (N - 1) \times \text{INCX})$. | |
| | <i>On entry:</i> the n -element vector x . | |
| | If $\text{INCX} > 0$, x_i must be stored in $X(1 + (i - 1) \times \text{INCX})$, for $i = 1, 2, \dots, N$. | |
| | If $\text{INCX} < 0$, x_i must be stored in $X(1 - (N - i) \times \text{INCX})$, for $i = 1, 2, \dots, N$. | |
| | Intermediate elements of X are not referenced. | |
| 3: | INCX – INTEGER | <i>Input</i> |
| | <i>On entry:</i> the increment in the subscripts of X between successive elements of x . | |
| 4: | Y(*) – COMPLEX (KIND=nag_wp) array | <i>Input</i> |
| | Note: the dimension of the array Y must be at least $\max(1, 1 + (N - 1) \times \text{INCY})$. | |
| | <i>On entry:</i> the n -element vector y . | |
| | If $\text{INCY} > 0$, y_i must be stored in $Y(1 + (i - 1) \times \text{INCY})$, for $i = 1, 2, \dots, N$. | |

If $\text{INCY} < 0$, y_i must be stored in $Y(1 - (N - i) \times \text{INCY})$, for $i = 1, 2, \dots, N$.

Intermediate elements of Y are not referenced.

5: INCY – INTEGER

Input

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

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Parallelism and Performance

F06GAF (ZDOTU) is not threaded in any implementation.

9 Further Comments

None.

10 Example

None.
