NAG Library Routine Document

F06GRF (ZDOTUI)

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

F06GRF (ZDOTUI) computes the scalar product of an unconjugated sparse complex vector with a complex vector.

2 Specification

```
FUNCTION F06GRF (NZ, X, INDX, Y)
COMPLEX (KIND=nag_wp) F06GRF
INTEGER               NZ, INDX(*)
COMPLEX (KIND=nag_wp) X(*), Y(*)
```

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

3 Description

F06GRF (ZDOTUI) returns, via the function name, the value of the scalar product

$$x^{\mathrm{T}}y$$

where x is a sparse complex vector stored in compressed form, and y is a complex vector in full storage form.

4 References

Dodson D S, Grimes R G and Lewis J G (1991) Sparse extensions to the Fortran basic linear algebra subprograms *ACM Trans. Math. Software* **17** 253–263

5 Arguments

1: NZ – INTEGER *Input*

On entry: the number of nonzeros in the sparse vector x.

2: X$(*)$ – COMPLEX (KIND=nag_wp) array *Input*

Note: the dimension of the array X must be at least $\max(1, \mathrm{NZ})$.

On entry: the compressed vector x. X contains x_i for $i \in J$.

3: INDX$(*)$ – INTEGER array *Input*

Note: the dimension of the array INDX must be at least $\max(1, \mathrm{NZ})$.

On entry: INDX must contain the set of indices J.

4: Y$(*)$ – COMPLEX (KIND=nag_wp) array *Input*

Note: the dimension of the array Y must be at least $\max_k\{\mathrm{INDX}(k)\}$.

On entry: the vector y. Only elements corresponding to indices in INDX are accessed.

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Parallelism and Performance

F06GRF (ZDOTUI) is not threaded in any implementation.

9 Further Comments

None.

10 Example

None.