NAG Library Routine Document

F06GTF (ZAXPYI)

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

F06GTF (ZAXPYI) adds a scaled sparse complex vector to an unscaled complex vector.

2 Specification

```
SUBROUTINE F06GTF (NZ, A, X, INDX, Y)
INTEGER                 NZ, INDX(*)
COMPLEX (KIND=nag_wp) A, X(*), Y(*)
```

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

3 Description

F06GTF (ZAXPYI) performs the operation

$$y \leftarrow \alpha x + y$$

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: A – COMPLEX (KIND=nag_wp) *Input*

On entry: the scalar α.

3: 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 $i \in J$.

4: INDX$(*)$ – INTEGER array *Input*

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

On entry: the indices of the elements in the compressed vector x.

Constraint: the indices must be distinct.

5: Y$(*)$ – COMPLEX (KIND=nag_wp) array *Input/Output*

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

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

On exit: the updated vector y.

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Parallelism and Performance

F06GTF (ZAXPYI) is not threaded in any implementation.

9 Further Comments

None.

10 Example

None.