NAG C Library Function Document

nag_zge_copy (f16tfc)

1   Purpose

nag_zge_copy (f16tfc) copies a complex general matrix.

2   Specification

```
void nag_zge_copy (Nag_OrderType order, Nag_TransType trans, Integer m, Integer n,
    const Complex a[], Integer pda, Complex b[], Integer pdb, NagError *fail)
```

3   Description

nag_zge_copy (f16tfc) performs the matrix-copy operation

$$B \leftarrow A, \quad B \leftarrow A^T \quad \text{or} \quad B \leftarrow A^H.$$

where A and B are m by n complex general matrices.

4   References

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

5   Parameters

1:    **order** – Nag_OrderType   *Input*

On entry: the **order** parameter specifies the two-dimensional storage scheme being used, i.e., row-major ordering or column-major ordering.   C language defined storage is specified by **order** = **Nag_RowMajor**.   See Section 2.2.1.4 of the Essential Introduction for a more detailed explanation of the use of this parameter.

Constraint: **order** = **Nag_RowMajor** or **Nag_ColMajor**.

2:    **trans** – Nag_TransType   *Input*

On entry: specifies the operation to be performed as follows:

if **trans** = **Nag_NoTrans**, $B \leftarrow A$;

if **trans** = **Nag_Trans**, $B \leftarrow A^T$;

if **trans** = **Nag_ConjTrans**, $B \leftarrow A^H$.

Constraint: **trans** = **Nag_NoTrans**, **Nag_Trans** or **Nag_ConjTrans**.

3:    **m** – Integer   *Input*

On entry: m, the number of rows of the matrix A.

Constraint: **m** ≥ 0.

4:    **n** – Integer   *Input*

On entry: n, the number of columns of the matrix A.

Constraint: **n** ≥ 0.

5: **a**[dim] – const Complex **Input**

Note: the dimension, dim, of the array **a** must be at least $\max(1, \mathbf{pda} \times \mathbf{n})$ when **order** = **Nag_ColMajor** and at least $\max(1, \mathbf{pda} \times \mathbf{m})$ when **order** = **Nag_RowMajor**.

If **order** = **Nag_ColMajor**, the (i, j)th element of the matrix A is stored in **a**[$(j - 1) \times \mathbf{pda} + i - 1$] and if **order** = **Nag_RowMajor**, the (i, j)th element of the matrix A is stored in **a**[$(i - 1) \times \mathbf{pda} + j - 1$].

On entry: the m by n general matrix A.

6: **pda** – Integer **Input**

On entry: the stride separating matrix row or column elements (depending on the value of **order**) in the array **a**.

Constraints:

> if **order** = **Nag_ColMajor**, **pda** $\geq \max(1, \mathbf{m})$;
> if **order** = **Nag_RowMajor**, **pda** $\geq \max(1, \mathbf{n})$.

7: **b**[dim] – Complex **Output**

Note: the dimension, dim, of the array **b** must be at least

> $\max(1, \mathbf{pdb} \times \mathbf{m})$ when **trans** = **Nag_NoTrans**;
> $\max(1, \mathbf{pdb} \times \mathbf{n})$ when and **order** = **Nag_ColMajor**;
> $\max(1, \mathbf{pdb} \times \mathbf{m})$ when and **order** = **Nag_RowMajor**.

If **order** = **Nag_ColMajor**, the (i, j)th element of the matrix B is stored in **b**[$(j - 1) \times \mathbf{pdb} + i - 1$] and if **order** = **Nag_RowMajor**, the (i, j)th element of the matrix B is stored in **b**[$(i - 1) \times \mathbf{pdb} + j - 1$].

On exit: the matrix B; B is m by n if **trans** = **Nag_NoTrans**, or n by m otherwise.

8: **pdb** – Integer **Input**

On entry: the stride separating matrix row or column elements (depending on the value of **order**) in the array **b**.

Constraints:

> if **order** = **Nag_ColMajor**,
> > if **trans** = **Nag_NoTrans**, **pdb** $\geq \max(1, \mathbf{m})$;
> > otherwise **pdb** $\geq \max(1, \mathbf{n})$;
>
> if **order** = **Nag_RowMajor**,
> > if **trans** = **Nag_NoTrans**, **pdb** $\geq \max(1, \mathbf{n})$;
> > otherwise **pdb** $\geq \max(1, \mathbf{m})$.

9: **fail** – NagError * **Input/Output**

The NAG error parameter (see the Essential Introduction).

6   Error Indicators and Warnings

NE_INT

On entry, **m** = $\langle value \rangle$.
Constraint: **m** ≥ 0.

On entry, **n** = $\langle value \rangle$.
Constraint: **n** ≥ 0.

On entry, **pda** = $\langle value \rangle$.
Constraint: **pda** $\geq \max(1, \mathbf{m})$.

On entry, **pda** = $\langle value \rangle$.
Constraint: **pda** $\geq \max(1, \mathbf{n})$.

On entry, $\mathbf{pdb} = \langle value \rangle$.
Constraint: $\mathbf{pdb} \geq \max(1, \mathbf{n})$.

NE_BAD_PARAM

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

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 document for nag_zgerfs (f07avc).