

NAG Toolbox for MATLAB

c06gq

1 Purpose

c06gq forms the complex conjugates of m Hermitian sequences, each containing n data values.

2 Syntax

```
[x, ifail] = c06gq(m, n, x)
```

3 Description

This is a utility function for use in conjunction with c06fp and c06fq to calculate inverse discrete Fourier transforms (see the C06 Chapter Introduction).

4 References

None.

5 Parameters

5.1 Compulsory Input Parameters

1: **m – int32 scalar**

m , the number of Hermitian sequences to be conjugated.

Constraint: $m \geq 1$.

2: **n – int32 scalar**

n , the number of data values in each Hermitian sequence.

Constraint: $n \geq 1$.

3: **x(m × n) – double array**

The data must be stored in **x** as if in a two-dimensional array of dimension $(1 : m, 0 : n - 1)$; each of the m sequences is stored in a **row** of the array in Hermitian form. If the n data values z_j^p are written as $x_j^p + iy_j^p$, then for $0 \leq j \leq n/2$, x_j^p is contained in **x**(p, j), and for $1 \leq j \leq (n - 1)/2$, y_j^p is contained in **x**($p, n - j$). (See also Section [missing entity c06background12](#) in the C06 Chapter Introduction.)

5.2 Optional Input Parameters

None.

5.3 Input Parameters Omitted from the MATLAB Interface

None.

5.4 Output Parameters

1: **x(m × n) – double array**

The imaginary parts y_j^p are negated. The real parts x_j^p are not referenced.

2: **ifail** – **int32 scalar**

0 unless the function detects an error (see Section 6).

6 Error Indicators and Warnings

Errors or warnings detected by the function:

ifail = 1

On entry, **m** < 1.

ifail = 2

On entry, **n** < 1.

7 Accuracy

Exact.

8 Further Comments

None.

9 Example

```
m = int32(3);
n = int32(6);
x = [0.3854;
     0.5417;
     0.9172;
     0.6772;
     0.2983;
     0.0644;
     0.1138;
     0.1181;
     0.6037;
     0.6751;
     0.7255;
     0.643;
     0.6362;
     0.8638;
     0.0428;
     0.1424;
     0.8723;
     0.4815];
[xOut, ifail] = c06gq(m, n, x)

xOut =
    0.3854
    0.5417
    0.9172
    0.6772
    0.2983
    0.0644
    0.1138
    0.1181
    0.6037
    0.6751
    0.7255
    0.6430
   -0.6362
   -0.8638
```

```
-0.0428  
-0.1424  
-0.8723  
-0.4815  
ifail =  
0
```
