

NAG Toolbox for MATLAB

c06gb

1 Purpose

c06gb forms the complex conjugate of a Hermitian sequence of n data values.

2 Syntax

```
[x, ifail] = c06gb(x, 'n', n)
```

3 Description

This is a utility function for use in conjunction with c06ea, c06eb, c06fa or c06fb to calculate inverse discrete Fourier transforms (see the C06 Chapter Introduction).

4 References

None.

5 Parameters

5.1 Compulsory Input Parameters

1: **x(n)** – double array

If the data values z_j are written as $x_j + iy_j$ and if **x** is declared with bounds $(0 : n - 1)$ in the (sub)program from which c06gb is called, then for $0 \leq j \leq n/2$, **x(j)** must contain $x_j (= x_{n-j})$, while for $n/2 < j \leq n - 1$, **x(j)** must contain $-y_j (= y_{n-j})$. In other words, **x** must contain the Hermitian sequence in Hermitian form. (See also Section [missing entity c06background12](#) in the C06 Chapter Introduction.)

5.2 Optional Input Parameters

1: **n** – int32 scalar

Default: The dimension of the array **x**.

n , the number of data values.

Constraint: $n \geq 1$.

5.3 Input Parameters Omitted from the MATLAB Interface

None.

5.4 Output Parameters

1: **x(n)** – double array

The imaginary parts y_j are negated. The real parts x_j 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, **n** < 1.

7 Accuracy

Exact.

8 Further Comments

The time taken by c06gb is negligible.

9 Example

```
x = [2.483612111433092;  
      -0.2659851230605639;  
      -0.2576817880971343;  
      -0.2563629394821892;  
      0.05806233079461325;  
      0.2029789655613654;  
      0.5308983652332478];  
[xOut, ifail] = c06gb(x)
```

```
xOut =  
    2.4836  
   -0.2660  
   -0.2577  
   -0.2564  
   -0.0581  
   -0.2030  
   -0.5309  
ifail =  
      0
```