Title

stata.com

conj( ) — Complex conjugate

Syntax

numeric matrix	`conj(`*numeric matrix Z*`)`
void	`_conj(`*numeric matrix A*`)`

Description

`conj(`Z`)` returns the elementwise complex conjugate of Z, that is, `conj(`a`+`b`i) =` a `-` b`i`. `conj()` may be used with real or complex matrices. If Z is real, Z is returned unmodified.

`_conj(`A`)` replaces A with `conj(`A`)`. Coding `_conj(`A`)` is equivalent to coding A `= conj(`A`)`, except that less memory is used.

Remarks and examples

stata.com

Given $m \times n$ matrix Z, `conj(`Z`)` returns an $m \times n$ matrix; it does not return the transpose. To obtain the conjugate transpose matrix, also known as the adjoint matrix, adjugate matrix, Hermitian adjoin, or Hermitian transpose, code

$$Z'$$

See [M-2] **op_transpose**.

A matrix equal to its conjugate transpose is called Hermitian or self-adjoint, although in this manual, we often use the term symmetric.

Conformability

`conj(`Z`)`:

Z:	$r \times c$
result:	$r \times c$

`_conj(`A`)`:

input:	
A:	$r \times c$
output:	
A:	$r \times c$

Diagnostics

`conj(`*Z*`)` returns a real matrix if *Z* is real and a complex matrix if *Z* is complex.

`conj(`*Z*`)`, if *Z* is real, returns *Z* itself and not a copy. This makes `conj()` execute instantly when applied to real matrices.

`_conj(`*A*`)` does nothing if *A* is real (and hence, does not abort if *A* is a view).

Also see

[M-5] **_transpose( )** — Transposition in place

[M-4] **scalar** — Scalar mathematical functions