```
MatrixMultiply B,C
MatrixMultiply A,M_product
```

Details

Supports multiplication of complex matrices.

An error is generated if the dimensioning of the input arrays is invalid.

See Also

MatrixOp and **MatrixMultiplyAdd** for more efficient matrix operations.

Matrix Math Operations on page III-138 for more about Igor's matrix routines.

FastOp for additional efficient non-matrix operations.

MatrixMultiplyAdd

MatrixMultiplyAdd [/ZC or /DC] [/A=*alpha*] [/B=*beta*] *matA*[/T], *matB*[/T] *matC*

The MatrixMultiplyAdd operation calculates the matrix expression:

```
matC = alpha*matA x matB + beta*matC
```

where * indicates scalar multiplication and x indicates matrix multiplication.

MatrixMultiplyAdd uses the LAPACK library for fast computation. It was added in Igor Pro 9.00.

Use /B=0 for just matrix multiply with no addition. In this case, the *beta***matC* term is not evaluated.

Parameters

matA, *matB* and *matC* must be of the same number type and must be single or double precision real or complex.

If *matA* is an NxP matrix then *matB* must be a PxM matrix and the product is an NxM matrix. If these conditions are violated MatrixMultiplyAdd generates an error.

Include the /T flag after *matA* and/or *matB* to indicate that the transpose of *matA* and/or *matB* should be used.

If *matC* is a NULL wave reference, then a free wave is created and a reference to it is stored in the wave reference *matC*.

Flags

/A=*alpha*	*alpha* is the scalar value multiplied with *matA*. It defaults to 1.
/B=*beta*	*beta* is the scalar value multiplied with *matB*. It defaults to 1. Use /B=0 to omit the *beta***matC* term.
/DC	Duplicates the wave referenced by *matC* as a free wave, performs the calculation with the duplicate as the destination, and stores a reference to the free wave in *matC*. /DC is allowed only when calling MatrixMultiplyAdd from a user-defined function. It is an error to use /DC from the command line or in a macro.
/T	Used after *matA* and/or *matB*, /T indicates tells MatrixMultiplyAdd to use the transform of *matA* and/or *matB* in the calculation.
/ZC	Clears the input wave reference *matC*. This guarantees that *matC* is NULL which causes MatrixMultiplyAdd to create a free output wave and store a reference to it in *matC*. When using MatrixMultiplyAdd in a loop, use /ZC to clear the input wave reference to ensure that a new free wave is created each time through the loop rather than re-using the same output wave. /ZC is allowed only when calling MatrixMultiplyAdd from a user-defined function. It is an error to use /ZC from the command line or in a macro.

Details

matA and *matB* must exist but, when running in a user-defined function, *matC* may or may not exist. If it does not exist, MatrixMultiplyAdd creates a free output wave, creates a wave reference named *matC*, and stores a reference to the free output wave in *matC*.