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0.1 Inner products

An inner product is a sesquilinear form with a positive-definite Hermitian matrix.

$\langle u, v \rangle = u^* H v$

If we are using the real field this is the same as:

$\langle u, v \rangle = u^T H v$

Where H is now a symmetric real matrix.

0.1.1 Same

$\langle v, v \rangle = v^* H v$

Always positive and real.

0.1.2 Properties

$\langle u, v \rangle \langle v, u \rangle = |\langle u, v \rangle|^2$