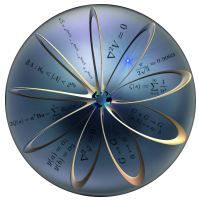

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Hilbert space

Canonical name	HilbertSpace
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Classification	msc 46C05
Related topic	InnerProductSpace
Related topic	HilbertModule
Related topic	QuadraticFunctionAssociatedWithALinearFunctional
Related topic	VectorNorm
Related topic	RieszSequence
Related topic	VonNeumannAlgebra
Related topic	HilbertSpacesAndQuantumGroupsVonNeumannAlgebras
Related topic	L2SpacesAreHilbertSpaces
Related topic	QuantumGroupsAndVonNeumannAlgebras
Related topic	HAlgebra
Related topic	Ries

A *Hilbert space* is an inner product space which is `http://planetmath.org/node/603`complete under the metric.

In particular, a Hilbert space is a Banach space in the norm by the inner product, since the norm and the inner product both induce the same metric. Any finite-dimensional inner product space is a Hilbert space, but it is worth mentioning that some authors require the space to be infinite dimensional for it to be called a Hilbert space.