

Strength functions: a strange function space associated to the positive semidefinite cone of Hilbert space operators

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Abstract

The so-called strength functions introduced by Busch and Gudder correspond to positive semidefinite operators acting on a complex Hilbert space. They are 'commutative objects' that can be used to faithfully represent operators which are 'non-commutative objects'. We equip the collection of strength functions with the usual sup-distance, it clearly induces a new metric on the positive semidefinite cone of Hilbert space operators. We study those two structures from several (algebraic and metrical) points of view. The main result is the descriptions of the corresponding surjective isometries.