

Linear maps on observables in von Neumann algebras preserving the maximal deviation

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We present results concerning the structure of certain isometries of operator algebras.

The most fundamental result of the area is due to R.V. Kadison who gave the complete description of all surjective linear isometries between (unital) C^* -algebras. He showed that any such transformation is a Jordan $*$ -isomorphism multiplied by a unitary element.

In this talk we present the result in the paper [1] and determine the structure of all bijective linear maps between the spaces of self-adjoint elements of von Neumann algebras which preserve another numerical quantity, the so-called maximal deviation defined for quantum observables. It turns out that those transformations are also closely related to the Jordan $*$ -isomorphisms of the underlying von Neumann algebras.

[1] L. Molnár, *Linear maps on observables in von Neumann algebras preserving the maximal deviation*, J. London Math. Soc. **81** (2010), 161–174.