Mathematics > Operator Algebras

An Ergodic Dilation of Completely Positive Maps

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We shall prove the following Stinespring-type theorem: there exists a triple $(\pi,\mathcal{H},\mathbf{V})$ associated with an unital completely positive map $\Phi:\mathfrak{A}\rightarrow \mathfrak{A}$ on C* algebra $\mathfrak{A}$ with unit, where $\mathcal{H}$ is a Hilbert space, $\pi:\mathfrak{A\rightarrow B}(\mathcal{H})$ is a faithful representation and $\mathbf{V}$ is a linear isometry on $\mathcal{H}$ such that $\pi(\Phi(a)=\mathbf{V}^*\pi(a)\mathbf{V}$ for all a belong to $\mathfrak{A}$. The Nagy dilation theorem, applied to isometry $\mathbf{V}$, allows to construct a dilation of ucp-map, Φ, in the sense of Arveson, that satisfies ergodic properties of a $\Phi $-invariante state ϕ on $\mathfrak{A}$, if Φ admit a $\phi $-adjoint.

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