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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, \$\Phi\$, in the sense of Arveson, that satisfies ergodic properties of a \$\Phi \$-invariante state \$\phi\$ on \$\mathfrak{A}\$, if \$\Phi\$ admit a \$\phi \$-adjoint.

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