A COVARIANT STINESPRING TYPE THEOREM FOR $\tau$-MAPS

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Abstract. Let $\tau$ be a linear map from a unital $C^*$-algebra $\mathcal{A}$ to a von Neumann algebra $\mathcal{B}$ and let $\mathcal{C}$ be a unital $C^*$-algebra. A map $T$ from a Hilbert $\mathcal{A}$-module $E$ to a von Neumann $\mathcal{C}$-$\mathcal{B}$ module $F$ is called a $\tau$-map if

$$\langle T(x), T(y) \rangle = \tau(\langle x, y \rangle)$$

for all $x, y \in E$.

A Stinespring type theorem for $\tau$-maps and its covariant version are obtained when $\tau$ is completely positive. We show that there is a bijective correspondence between the set of all $\tau$-maps from $E$ to $F$ which are $(u', u)$-covariant with respect to the dynamical system $(G, \eta, E)$ and the set of all $(u', u)$-covariant $\tilde{\tau}$-maps from the crossed product $E \times_{\eta} G$ to $F$, where $\tau$ and $\tilde{\tau}$ are completely positive.

Full text

Acknowledgement. The author would like to express thanks of gratitude to Santanu Dey for several discussions.

References


2010 Mathematics Subject Classification: Primary: 46L08, 46L55; Secondary: 46L07, 46L53.

Keywords: Stinespring representation; Completely positive maps; Von Neumann modules; Dynamical systems.

This work was supported by CSIR, India.

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Surveys in Mathematics and its Applications **9** (2014), 149 – 166
http://www.utmjiu.ro/math/sma