TOPOLOGICAL DUAL OF $B_\infty(I, \mathcal{L}_1(X, Y))$ WITH APPLICATION TO STOCHASTIC SYSTEMS ON HILBERT SPACE

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Abstract

In this paper, we prove that the topological dual of the Banach space of bounded measurable functions with values in the space of nuclear operators, furnished with the natural topology, is isometrically isomorphic to the space of finitely additive linear operator-valued measures having bounded variation in a Banach space containing the space of bounded linear operators. This is then applied to a stochastic structural control problem. An optimal operator-valued measure, considered as the structural control, is to be chosen so as to minimize fluctuation (volatility). Both existence of optimal policy and necessary conditions of optimality are presented including a conceptual algorithm.

Keywords: representation theory, topological dual, finitely additive operator-valued measures, polish space, Hilbert space, stochastic systems, structural control, uncertainty abatement.


REFERENCES


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