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N U AHMED* (ahmed@site.uottawa.ca), 800 King Edward Str, University of Ottawa, Ottawa, Ontario K1N6N5, Canada. *INFINITE DIMENSIONAL STOCHASTIC SYSTEMS AND OPTIMAL CONTROL OF INDUCED MEASURES BY FEEDBACK OPERATORS WITH STRONG OPERATOR TOPOLOGY.*

In this paper we consider direct optimal feedback control of stochastic differential equations on infinite dimensional spaces. The system is governed by a semilinear evolution equation. The principal operator, generating a C_0 -semigroup, is perturbed by a class of bounded linear operators from an admissible set in the space of bounded linear operators endowed with the strong operator topology. These are considered as state or output feedback controls. We consider the corresponding family of measure valued functions and present sufficient conditions for weak compactness on the space of probability measures and functions taking values in these spaces. Our interest is to control the temporal evolution of these probability measure valued functions by use of feedback operators so as to extremize certain objective functionals defined on the space of measures. We present results on existence of optimal feedback operators.

Key Words Stochastic Differential Equations, Banach Spaces, Optimal Feedback Control, Objective Functionals, Lévy-Prohorov metric, Hausdorff dimension, Time-Optimal problems.

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