Relatively exact controllability of fractional stochastic delay system driven by Lévy noise

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Abstract

In this article, we consider the relatively exact controllability of fractional stochastic delay system (FSDS) driven by Lévy noise. Firstly, we derive the solution of linear FSDS via delayed matrix functions of Mittag-Leffler (M-L). Subsequently, by virtue of the controllability Grammian matrix, we explore the relatively exact controllability of linear FSDS. In addition, with the aid of Jensen's inequality, Hölder's inequality and Itô's isometry, the existence and uniqueness of the considered nonlinear FSDS are investigated by employing Banach contraction principle.Thereafter, the relatively exact controllability of nonlinear FSDS is discussed. Finally, the theoretical results are supported through an example.

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