

**ON A CLASS OF FORWARD-BACKWARD STOCHASTIC  
DIFFERENTIAL SYSTEMS IN INFINITE DIMENSIONS**

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**Abstract**

We prove that a class of fully coupled forward-backward system in infinite dimensions has a local unique solution. After studying the regularity property of the solution, we prove that for a peculiar class of systems arising in the theory of stochastic optimal control, the solution exists in arbitrary large time interval. Finally we investigate the connection between the solution to the systems and a stochastic optimal control problem.