

# THREE PROBLEMS FOR STOCHASTIC FLOWS ASSOCIATED WITH NONLINEAR SPDES AND BACKWARD PARABOLIC EQUATIONS WITH PARAMETERS

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In this paper are solved three problems related to stochastic differential equations. In problem (A) we construct a classical solution for a Markovian system of SDE with parameters for which a useful integral representation of the stochastic flow is valid. In problem (B) a fundamental system of stochastic first integrals can be constructed as the unique solution of the flow equation. The solution of Problem (A) and (B) is used to associate a non-Markovian SDE and functionals for which a filtering Problem (C) is solved, where the drift vector fields commutes with diffusion vector fields.