

Belopolskaya Ya. (Sirius University of Science and Technology, Sochi, Russia) **Forward and backward nonlinear Kolmogorov equations for diffusion processes.** We consider the backward and the forward Cauchy problem for several types of nonlinear parabolic equations and systems and construct probabilistic representations of their solutions. Unlike the linear theory the required probabilistic representations are connected with different diffusion processes and this yields to construct them independently. We derive stochastic equations to describe the required stochastic processes and use them to develop new numerical schemes to obtain the approximate solutions of the original problems.

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