

ON APPROXIMATE SOLUTION TO STOCHASTIC DIFFERENTIAL DELAY EQUATIONS

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ABSTRACT

Taking into account the environmental noise we are led to the stochastic functional differential equation

$$dx(t) = f(x_t, t)dt + g(x_t, t)dB(t) \quad \text{on } t_0 \leq t \leq T. \quad (1)$$

When we try to carry over the theory of stochastic differential to stochastic functional differential equations, the following natural question arises: Is there any explicit solution? If there is not, how can the solution obtain the approximate solution? In this talk, we shall give one of the answer to this question. A special but important class of stochastic functional differential equations is the following stochastic differential delay equations.

$$dx(t) = F(x(t), x(t - \tau), t)dt + G(x(t), x(t - \tau), t)dB(t) \quad (2)$$

on $t \in [t_0, T]$. Moreover, we shall discuss Caratheodory's approximate solutions to stochastic differential equations (2). Also, we discussed the difference between the approximate solution and the accurate solution to stochastic differential delay equation.

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