

1145-60-1279

Ram Sharan Adhikari* (radhikari@rsu.edu), 1701 W Will Rogers Blvd, Claremore, OK 74014. *A weak rectangular method for a class of stochastic differential equations and mean square stability analysis.*

This work proposes a novel weak rectangular method for numerical solution for a class of stochastic differential equations. We show that such a method has weak convergence of order one. The proposed weak rectangular method has the potential to overcome some of the numerical instabilities that are often experienced when using explicit Euler method. This work also aims to determine the mean-square stability region of the weak rectangular method for linear stochastic differential equations with multiplicative noises. In this work, a mean-square stability region of the weak rectangular is identified, and step-sizes for the numerical method where errors propagation are under control in well-defined sense are given. The main results are illustrated with numerical examples. (Received September 20, 2018)