

1135-VT-1303      **Ram Sharan Adhikari\*** (radhikari@rsu.edu), Rogers state University, Claremore, OK 74017.  
*Mean square stability analysis of a weak modified Euler-Maruyama method based on trapezoidal rule for a class of stochastic differential equations.*

The proposed weak modified Euler-Maruyama 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 modified Euler-Maruyama method for linear stochastic differential equations with multiplicative noises. In this work, a mean-square stability region of the weak modified Euler-Maruyama scheme 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 21, 2017)