1135-65-1628 **Chong Sun*** (chong_sun@baylor.edu), 1806 south 8th street, apt 148, Waco, TX 76706, and **Qin Sheng**. *Linearly Splitting Methods for a Heston Stochastic Volatility Model.*

Black-Scholes type of partial differential equations are frequently utilized for pricing American/European style options and similar financial derivatives. This is because the price of the underlying asset often follows a Brownian motion with a positive drift term. Black-Scholes equations are anti-diffusive. They are derived from an application of Feymann-Kac formula for corresponding stochastic differential equations.

Our primary concern is the numerical stability of split schemes applied to the aforementioned differential equations. We are particularly interested in the Heston stochastic volatility model possessing cross derivative terms. Those terms have been posing difficulties in proving the anticipated stability in computations. Though traditional analysis are based on von Neumann method, the limitation of such an analysis is obvious due to its boundary condition restrictions.

A novel new discretization strategy is proposed in our study. We further prove the stability of such schemes via spectrum analysis without a restriction of types of boundary conditions considered. Computational experiments are given to illustrate our conclusions. (Received September 23, 2017)