1125-65-2397   **Joshua Lee Padgett*** (`josh_padgett@baylor.edu`), 1721 S 9th St, Apt #206, Waco, TX 76706.
An approach to the numerical solution of multidimensional stochastic Kawarada equations via adaptive operator splitting.

This talk concerns the numerical solution of multidimensional nonlinear Kawarada equations. The stochastically influenced degenerate reaction-diffusion equations exhibit strong singularities and play an important role in numerous industrial applications. Moving mesh strategies and operator splitting are utilized throughout the approach to yield favorable adaptive grids in both space and time. Highly efficient and effective nonuniform difference schemes are developed. It is shown that the numerical solution acquired not only approximates the theoretical solution satisfactorily, but also preserves the required positivity, monotonicity and stability of the solution when proper constraints are satisfied. The latter is particularly crucial to quenching-combustion simulations. Numerical experiments are given to illustrate and demonstrate our conclusions. (Received September 20, 2016)