1122-65-207 **Mahboub Baccouch*** (mbaccouch@unomaha.edu), 6001 Dodge St., DSC 233, Omaha, NE 68182.

Stochastic discontinuous Galerkin methods for stochastic differential equations.

Stochastic initial-value problems and stochastic boundary-value problems are of increasing interest as their theoretical foundation is developed and new applications are discovered. In this talk, we apply a stochastic analogue of the deterministic discontinuous Galerkin (DG) finite element method to stochastic differential equations (SDEs). The method is shown to be numerically stable in the mean sense and also A-stable. As a result, it is suitable for solving stiff SDEs. Moreover, the method is proved to be convergent in the mean-square sense. Numerical evidence demonstrates that our proposed DG scheme for SDEs with additive noise has a strong convergence order of 2p+1, when p-degree piecewise polynomials are used. When applied to SDEs with multiplicative noise, the SDG method is strongly convergent with order p. We also apply a stochastic analogue of the deterministic local discontinuous Galerkin (LDG) method to linear diffusion problems driven by white noise. Numerical experiments are performed to show the robustness of our proposed schemes. (Received August 14, 2016)