1079-65-339 **Xiaobing H Feng** (xfeng@utk.edu), Department of Mathematics, The University of Tennessee, Knoxville, TN 37996, and **Thomas L Lewis*** (tlewis@math.utk.edu), Department of Mathematics, The University of Tennessee, Knoxville, TN 37996. *Mixed and local discontinuous Galerkin methods for fully nonlinear second order partial differential equations.* Preliminary report.

In this talk we shall present some latest advances on developing discontinuous Galerkin (DG) methods for fully nonlinear second order PDEs such as the Monge-Ampere type equations and Hamilton-Jacobi-Bellman equations in the one-dimensional case. The focus of the talk is to discuss a new and general strategy for constructing such DG methods which can reliably approximate viscosity solutions of the fully nonlinear PDEs. The proposed DG methods are high order and triangular mesh generalizations of a class of finite difference methods developed by the authors for these fully nonlinear PDEs. The connection between the proposed DG methods and the finite difference methods will be explained, numerical experiment results will also be presented to gauge the performance of the proposed DG methods. If time permits, extensions to high dimensional cases and to the time-dependent PDEs will also be discussed. (Received January 17, 2012)