1086-65-1635 **Yifan Zhang*** (yifan_zhang@brown.edu), 182 George Street, Providence, RI 02912, **Xiangxiong Zhang** (zhangxx@mit.edu), Department of Mathematics, Massachusetts Institute of Technology, Cambridge, MA 02139, and **Chi-Wang Shu** (shu@dam.brown.edu), 182 George street, Providence, RI 02912. *Maximum-principle-satisfying second order discontinuous Galerkin schemes for convection-diffusion equations on triangular meshes.*

In this talk, second order accurate discontinuous Galerkin (DG) schemes which satisfy a strict maximum principle for general nonlinear convection-diffusion equations on unstructured triangular meshes will be proposed. We prove that under suitable time step restriction for forward Euler time stepping, for general nonlinear convection-diffusion equations, a simple scaling limiter coupled with second order DG methods preserves the physical bounds indicated by the initial condition while maintaining uniform second order accuracy. The limiters are mass conservative and easy to implement. We extend the schemes to SSP high order time discretizations and two dimensional convection-diffusion equations on triangular meshes. There are no geometric constraints on the meshes such as angle acuteness. Numerical results including incompressible Navier-Stokes equations will be presented. (Received September 23, 2012)