1038-65-185 **Yong-Tao Zhang*** (yzhang10@nd.edu), Department of Mathematics, University of Notre Dame, 255 Hurley Hall, Notre Dame, IN 46556-4618. *Discontinuous Galerkin fast sweeping methods.*

Fast sweeping methods are a class of efficient iterative algorithms to solve the static Hamilton-Jacobi equations for viscosity solutions. The linear computational complexity can be achieved for fast sweeping methods. However, designing efficient high order fast sweeping methods is difficult. Discontinuous Galerkin (DG) finite element methods are a class of state-of-the-art high order methods for solving hyperbolic and many other types of PDEs. One of the advantages of DG methods is the compactness of computation stencils. In this presentation, I will talk about our recent progress on developing high accuracy fast sweeping methods based on discontinuous Galerkin (DG) local solvers. A novel strategy is developed to combine the compact DG discretization with the causality of the Eikonal equations. Good accuracy and fast convergence speed will be shown via numerical examples. (Received February 08, 2008)