1093-65-110 **Dong Zhou*** (dzhou@temple.edu), 1805 N broad st, Room 638 Wachman Hall, Department of Mathematics Temple University, philadelphia, PA 19122. *Jet Schemes for Hamilton-Jacobi Equations Using an Evolve-and-project Framework.* Preliminary report.

Jet schemes are based on tracking characteristics and using suitable Hermite interpolations to achieve high order. For Hamilton-Jacobi equations, the characteristic equations are in general nonlinear, i.e. the characteristic curves may collide or emanate radially for local extrema. We demonstrate that in these situations, the use of explicit schemes for solving the characteristic equations can yield incorrect results. We therefore propose an implicit update rule that is based on solving a constrained polynomial optimization problem in each grid cell, and then reconstructing the solution from Hermite interpolations and evolving it in time. Numerical tests show that this implicit approach approximates entropy solutions correctly and achieves high order accuracy in the smooth part of the solution. Moreover, we demonstrate that this approach can be interpreted as an evolve-and-project process similar to the advect-and-project approach for linear advection equations. (Received August 06, 2013)