

## HIGH ORDER NUMERICAL METHODS FOR TIME DEPENDENT HAMILTON-JACOBI EQUATIONS

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In these lectures we review a few high order accurate numerical methods for solving time dependent Hamilton-Jacobi equations. We will start with a brief introduction of the Hamilton-Jacobi equations, the appearance of singularities as discontinuities in the derivatives of their solutions hence the necessity to introduce the concept of viscosity solutions, and first order monotone numerical schemes on structured and unstructured meshes to approximate such viscosity solutions, which can be proven convergent with error estimates. We then move on to discuss high order accurate methods which are based on the first order monotone schemes as building blocks. We describe the Essentially Non-Oscillatory (ENO) and Weighted Essentially Non-Oscillatory (WENO) schemes for structured meshes, and WENO schemes and discontinuous Galerkin (DG) schemes for unstructured meshes.