Michael James Pollack* (mpollack@iastate.edu). *Alternating evolution schemes for Hamilton-Jacobi equations.*

We propose a high resolution Alternating Evolution (AE) scheme to solve Hamilton-Jacobi equations. The construction of the AE scheme is based on an alternating evolution system of the Hamilton-Jacobi equation. A semi-discrete scheme derives directly from a sampling of this system on alternating grids. Higher order accuracy is achieved by a combination of high-order non-oscillatory polynomial reconstruction from the obtained grid values and a time discretization with matching accuracy. Local AE schemes are made possible by choosing the scale parameter to reflect the local distribution of the waves. The AE schemes have the advantage of easy formulation and implementation, and efficient computation of the solution. (Received February 13, 2012)