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Xiaobing Feng* (xfeng@math.utk.edu), Department of Mathematics, The University of Tennessee, Knoxville, TN 37996. *Vanishing Moment Method and Numerical Approximations for Fully Nonlinear PDEs*. Preliminary report.

In this talk, I shall first introduce a vanishing moment method for approximating viscosity solutions of fully nonlinear PDEs, and then discuss the convergence of the method. The proposed vanishing moment method combined with existing wealthy numerical methods/algorithms for high order quasilinear PDEs makes it possible to construct practical and convergent numerical methods for computing viscosity solutions of fully nonlinear PDEs, a task which is largely impracticable so far. Finally, I shall present some numerical experiment results for the Monge-Ampere equation and the prescribed Gauss curvature equation to demonstrate both convergence and efficiency of the proposed numerical methodology for solving fully nonlinear PDEs. (Received August 28, 2006)