

SEMI-LAGRANGIAN METHODS FOR THE SECOND ORDER FULLY NONLINEAR MONGE-AMPERE TYPE EQUATIONS

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Abstract. In this talk I shall present a new approach for developing convergent semi-Lagrangian (and finite difference) methods for approximating viscosity solutions of second order fully nonlinear Monge-Ampere (MA) type equations on general triangular and rectangular grids. This is done by first establishing an equivalent (in the viscosity sense) Hamilton-Jacobi-Bellman (HJB) reformulation of the MA equation and then designing monotone semi-Lagrangian methods for the resulting HJB equation. The new approach also bridges the gap between advances on numerical methods for the HJB type and for the MA type second order fully nonlinear PDEs. This talk is based on a joint work with Max Jensen of University of Sussex, UK.