STANDARD FINITE ELEMENTS FOR THE NUMERICAL RESOLUTION OF THE ELLIPTIC MONGE-AMPÈRE EQUATION

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With the long term goal of making available to optimal transportation problems efficient methods such as multigrid methods and adaptive mesh refinement, we consider the discretization of the Dirichlet problem of the Monge-Ampère equation by finite elements. We propose a natural variational formulation which is discretized with spaces of piecewise polynomials C^r functions, $r = 0, 1$. We will discuss results on the existence of a solution to the discrete problem, convergence of a convexity preserving time marching method for solving it and the convergence of the discretization.

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