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Analysis of numerical methods for the Monge-Ampère equation

The Monge-Ampère equation is a nonlinear partial differential equation with a geometric theory due to Aleksandrov. It appears in a wide range of applications, e.g. optimal transportation and reflector design. Solutions of the Monge-Ampère equation are in general not smooth, and hence difficult to compute with standard discretizations. I will review a large class of methods proposed so far, from the point of view of structure preserving discretizations. I will discuss how this new point of view leads to an analysis of the theoretical convergence properties of the methods.