Meeting: 1003, Atlanta, Georgia, SS 27A, AMS-SIAM Special Session on Analysis and Applications in Nonlinear Partial Differential Equations, I

1003-35-599   **Truyen Van Nguyen*** (`nguyen@math.temple.edu`), Department of Mathematics, Temple University, Philadelphia, PA 19122. *On Monge-Ampère Type Equations Arising In Optimal Transportation Problems.*

We consider Monge-Ampère type equations of the form

$$g(x - Dc^*(-Du(x))) \det(I + D^2 c^*(-Du(x)) D^2 u(x)) = f(x) \quad \text{in } \Omega,$$

which arise in optimal transportation problems. The study of these equations will play an important role in understanding the smoothness of the optimal maps for general strictly cost functions. Here we introduce a notion of weak solutions for the equations, and prove the comparison principle and the analogous maximum principle of Aleksandrov-Bakelman-Pucci. We also give a positive answer for the solvability of the Dirichlet problems for these equations. For this last purpose we introduce a notion of strictly c-convex domains. (Received September 23, 2004)