SUFFICIENT CONDITIONS FOR THE EXISTENCE OF VISCOSITY SOLUTIONS FOR NON CONVEX HAMILTONIANS

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We study the Dirichlet problem for the Hamilton-Jacobi equation

$$\begin{cases} F(Du) = 0 & \text{in} \quad \Omega \\ u = \varphi & \text{on} \quad \partial\Omega \end{cases} \tag{1}$$

where $\Omega \subset \mathbb{R}^n$ is a bounded open set, $F : \mathbb{R}^n \to \mathbb{R}$ is continuous and $\varphi : \partial\Omega \to \mathbb{R}$ is Lipschitz.

Under some technical assumptions on F, we give a sufficient geometric condition for the existence of Lipschitz viscosity solutions of problem (1). In particular we show an Hopf-Lax type extension formula in the case where we drop the classical hypotheses of convexity and regularity on F and Ω.