Regularity Properties of Viscosity Solutions of Nonconvex Hamilton - Jacobi Equations

Nguyen Hoang[1*]

[1]Department of Mathematics, College of Education, Hue University, 32 Le Loi, Hue, Vietnam

nguyenhoanghue@gmail.com, nguyenhoang@hueuni.edu.vn

Abstract

Consider the Cauchy problem for Hamilton-Jacobi equation (H, σ) :

1. $u_t + H(D_x u) = 0, (t, x) \in \Omega = (0, T) \times \mathbb{R}^n$,

2. $u(0, x) = \sigma(x), x \in \mathbb{R}^n$.

Some properties of generalized characteristic curves in connection with viscosity solution of the problem (H, σ) defined by Hopf formula $u(t, x) = max_{q \in \mathbb{R}^n}\{\langle x, q \rangle - \sigma^*(q) - tH(q)\}$ are studied. We are concerned with the points where the solution $u(t, x)$ is differentiable, and the strip of the form $\mathcal{R} = (0, \theta) \times \mathbb{R}^n$ of the domain Ω where $u(t, x)$ is of class $C^1(\mathcal{R})$.

Keywords:

---

*Corresponding author.