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Representation of Viscosity Solutions of Hamilton-Jacobi Equations

Hamilton Jacobi equations of the form $H(x, u, Du) = 0$ are considered with $H(x, r, p)$ nondecreasing in r and quasiconvex in p. A viscosity solution may be represented as the value function of a calculus of variations or control problem in L^∞, i.e., as a minimax problem. For time dependent problems of the form $u_t + H(t, x, u, Du) = 0$ we require that $H(t, x, r, p)$ is convex in p and nondecreasing in r. The viscosity solution is then given as the value of an L^∞ problem.

Keywords: Quasiconvex, Hamilton-Jacobi, representation.

MSC: 35F21, 49L25