

On the large time behavior of solutions of Hamilton-Jacobi Equations

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Recently a lot of works have been devoted to the study of the large time behavior of the solutions of first-order Hamilton-Jacobi equations of the form

$$u_t + H(x, Du) = 0 \quad \text{in } \mathbb{R}^N \times (0, +\infty) ,$$

$$u = u_0 \quad \text{on } \mathbb{R}^N \times \{0\} ,$$

in the case when the hamiltonian H , the initial datum u_0 and the solution u are assumed to \mathbb{Z}^N -periodic in x .

Several approaches have been used to address this problem, relying either on dynamical systems methods or partial differential equations (pde in short) technics.

The aim of the proposed work is to provide a first step into the problem and the approach by pde methods, through the study following article which was one of the first breakthrough in the theory

G. Namah & J.M. Roquejoffre : Remarks on the long time behaviour of the solutions of Hamilton-Jacobi equations. Comm. Partial Differential Equations 24 (1999), no. 5-6, 883–893.