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The discussion on the existence of the viscosity solution of the discounted Hamilton-Jacobi equation in non-compact space. (Chinese. English summary) Zbl 07752184

Summary: If the base space is compact, the viscosity solution with a continuous initial function is locally semi-concave, so it is the viscosity solution of the corresponding Hamilton-Jacobi (H-J for short) evolutionary equation (contact H-J equation for short). If the base space is non-compact, the infimum of the Lax-Oleinik solution of the H-J equation or the contact H-J equation may not be obtained. In this paper, the authors discuss the condition of the viscosity solution of the discounted H-J equation being finite in non-compact space, and give the expression of the viscosity solution under this assumption.

MSC:
35F25 Initial value problems for nonlinear first-order PDEs
35D99 Generalized solutions to partial differential equations

Keywords:
discounted Hamilton-Jacobi equation; viscosity solution; finite

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References:

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