The vanishing discount problem in a noncompact setting

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We study the asymptotic behavior of the solutions to a family of discounted Hamilton–Jacobi equations when the discount factor goes to zero.

The new point is that we tackle the problem in a noncompact setting. We prove that a distinguished critical solution of the equation with vanishing discount is selected at the limit. Our approach is based on some duality results between suitable cones of Lagrangian functions and families of probability measures defined on the tangent bundle of the ambient space.

Research in collaboration with Hitoshi Ishii (Tsuda University).