



# NICE WEAK KAM METHODS IN NICE

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**A Weak KAM theorem for the nonlinear Vlasov equation**  
(joint work with A. Tudorascu)

**Abstract**

We apply the weak KAM theory to the one-dimensional Vlasov system with smooth periodic potential. This study concerns solutions of the Vlasov system which can be described as paths in the Hilbert  $L^2(I) \times L^2(I)$  where  $I$  is the unit interval. We introduce an  $L^2(I)$ -infinite dimensional torus  $\mathbb{T}$  and show existence of a viscosity solution of a cell problem on  $\mathbb{T}$ . Asymptotic properties of the one-dimensional Vlasov systems, which are absolute minimizers of an action and of a prescribed rotation number are established.