Title: *Lagrangian Dynamics on an infinite-dimensional torus.*

Abstract: The space $L^2(0,1)$ has a natural Riemannian structure on the basis of which we introduce an $L^2(0,1)$–infinite dimensional torus $\mathbb{T}$. We consider the group $\mathcal{G}$ of bijections $G : [0,1] \to [0,1]$ which preserve Lebesgue measure. We also consider a class of Hamiltonians defined on the cotangent bundle of $\mathbb{T}$, invariant under the action of $\mathcal{G}$. We establish existence of a viscosity solution for a *cell problem* on $\mathbb{T}$, that are invariant under the action of $\mathcal{G}$. We apply this to the study of one-dimensional nonlinear Vlasov system with periodic potential. (This is a joint work with A. Tudorascu).