CHAIN LEVEL FLOER THEORY AND GEOMETRY OF HAMILTONIAN DIFFEOMORPHISM GROUP

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OUTLINE

In this lecture series, we will explain a Floer theoretic approach to various problems in symplectic topology, mostly concerning the geometry of Hamiltonian diffeomorphisms. We will first explain construction of spectral invariants associated to each quantum coholomogy class of arbitrary compact symplectic manifolds and study basic properties of them. Based on these spectral invariants, we will construct a homological invariant norm on the Hamiltonian diffeomorphism group and its relation to the Hofer's norm. Then we will give a Floer theoretic proof of the energy-capacity inequality and provide a systematic account on the length minimizing property of Hofer's geodesics. In the mean time, we will also explain some basic facts on the chain level Floer theory and on the Hamiltonian fibrations.

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