

FLOER HOMOLOGY AND SYMPLECTIC DYNAMICS

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OUTLINE

We will focus on the following topics dealing with algebra, geometry and dynamics of symplectic diffeomorphisms.

I. Asymptotic invariants of symplectic maps, including the classical trichotomy "hyperbolic/parabolic/elliptic" in the context of diffeomorphisms.

II. Restrictions on symplectic actions of finitely generated groups, including a symplectic version of the Zimmer program which deals with actions of lattices.

III. Quasimorphisms (i.e. homomorphisms to real numbers "up to a bounded error") on the group of Hamiltonian diffeomorphisms and their applications to Hofer's geometry and Lagrangian intersections.

We describe recent progress in these directions achieved by using tools of "hard" symplectic topology-quantum homology, filtered Floer homology and spectral invariants of Hamiltonian diffeomorphisms.

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