WEDNESDAY JUNE 5, 2024

Viktor GINZBURG (Santa Cruz)

Title: Invariant Sets and Hyperbolic Periodic Orbits

Abstract: The presence of hyperbolic periodic orbits or invariant sets often has an affect on the global behavior of a dynamical system. In this talk we discuss two theorems along the lines of this phenomenon, extending some properties of Hamiltonian diffeomorphisms to dynamically convex Reeb flows on the sphere in all dimensions.

The first one, complementing other multiplicity results for Reeb flows, is that the existence of a hyperbolic periodic orbit forces the flow to have infinitely many periodic orbits. This result can be thought of as a step towards Franks’ theorem for Reeb flows in higher dimensions. The second result is a contact analogue of the higher-dimensional Le Calvez-Yoccoz theorem proved by the speaker and Gurel and asserting that no periodic orbit of a Hamiltonian pseudo-rotation is locally maximal. The talk is based on a joint work with Erman Cineli, Basak Gurel and Marco Mazzucchelli.

Shira TANNY (Princeton)

Title: From Gromov–Witten theory to the closing lemma

Abstract: An old question of Poincaré concerns creating periodic orbits via perturbations of a flow/diffeomorphism. While pseudoholomorphic methods have successfully addressed this question in dimensions 2-3, the higher-dimensional case remains less understood. I will describe a connection between this question and Gromov–Witten invariants, which goes through a new class of invariants of symplectic cobordisms. This is a joint work with Julian Chaidez.

Zhengyi ZHOU (Chinese Academy of Science)

Title: Bourgeois contact manifolds are tight

Abstract: We will explain that Bourgeois' contact structures on MxT^2 determined by the supporting open books of a contact manifold M are always tight. This answers a question by Lisi-Marinković-Niederkrüger in the negative. The proof is based on a contact homology computation leveraging holomorphic foliations and Bao-Honda's semi-global Kuranishi structures. This is based on a joint work with Russell Avdek.