

WORKSHOP ON SYMPLECTIC TOPOLOGY: ABSTRACTS

Miguel Abreu: On the number of periodic orbits of non-degenerate lacunary contact forms on prequantizations

Abstract. A non-degenerate contact form is lacunary if the indices of its contractible periodic Reeb orbits have the same parity. As far as I know, every known contact form with finitely many periodic orbits is non-degenerate and lacunary. In this talk I will present joint work with L. Macarini (IMPA), where we show that the number of contractible periodic Reeb orbits of every non-degenerate lacunary contact form on suitable prequantizations is precisely given by the rank of the rational homology of the base. Examples of such prequantizations include the standard contact sphere and the unit cosphere bundle of a compact rank one symmetric space (CROSS). We can also consider some prequantizations of orbifolds, like lens spaces and their unit cosphere bundles, and obtain a similar multiplicity result.

Filip Broćić: Bordism classes of loops and relative Gromov width

Abstract. In the talk, I will give bounds for the relative Gromov width of star-shaped domains in cotangent bundles, for certain classes of base manifolds. I will also provide examples where our bound is sharp. The method of the proof uses a moduli space associated with the bordism class in the free loop space of the base. Another consequence of analyzing such a moduli space is the existence of a periodic orbit for a large class of Hamiltonians. This is based on the joint work with Dylan Cant. Time permitting, I will talk about our related work in progress, where we bound the relative Gromov width for a different class of manifolds.

Urs Frauenfelder: Spectral Jumps in Tate Rabinowitz Floer homology

Abstract. This is joint work with Kai Cieliebak. We are looking for n interacting particles. For these we are introducing the delayed Rabinowitz action functional which is invariant under the action on an n -dimensional torus, which appears by reparametrizing the time of each particle individually. The corresponding Tate chain complex admits a double filtration. This leads to the phenomenon of spectral jumps. We are relating these to semiclassics and EBK quantization.

Yaniv Ganor: TBA

Abstract. TBA

Rémi Leclercq: TBA

Abstract. TBA

Vladimir Marković: Unramified correspondence and virtual homology of mapping class groups

Abstract. I shall discuss my work showing that the Bogomolov-Tschinkel universality conjecture holds if and only if the mapping class groups of a punctured surface is large (which is essentially the negation of the Ivanov conjecture about the mapping class groups). In addition I shall discuss the recent result showing that the closely related Putman-Wieland conjecture holds for a random cover.

Alexander Ritter: Equivariant Floer theory for symplectic \mathbb{C}^* -manifolds

Abstract. I will talk about recent progress in a series of joint papers with Filip Živanović, about a large class of non-compact symplectic manifolds, which includes semiprojective toric varieties, quiver varieties, and conical symplectic resolutions of singularities. These manifolds admit a Hamiltonian circle action which is part of a pseudo-holomorphic action of a complex torus. The symplectic form on these spaces is highly non-exact, yet we can make sense of Hamiltonian Floer cohomology for functions of the moment map of the circle action. We showed that Floer theory induces a filtration by ideals on quantum cohomology. I will explain recent progress on equivariant Floer cohomology for these spaces, in which case we obtain a filtration on equivariant quantum cohomology. If time permits, I will also mention a presentation of symplectic cohomology and quantum cohomology for semiprojective toric varieties.

Felix Schlenk: Symplectic almost squeezings

Abstract. Around 2000, Biran introduced the notion of polarization of a symplectic manifold, and showed that the associated Lagrangian skeleta exhibit remarkable rigidity properties. He proved in particular that their complements may have small Gromov width. In this work, we introduce a version of polarization on affine symplectic manifolds. These polarizations are more flexible than those of closed symplectic manifolds, which provides a wider range of applications. For instance, given an affine symplectic manifold V and any closed symplectic 4-manifold M of larger volume, there exists an isotropic CW complex in V such that its complement symplectically embeds into M . Specifically, after removing from a 4-ball of any radius finitely Lagrangian planes, one finds an embedding into the standard cylinder, extending a result by Sackel-Song-Varolgunes-Zhu and Brendel.

This is work joint with Emmanuel Opshtein.

Baptiste Seraille: TBA

Abstract. TBA

Egor Shelukhin: TBA

Abstract. TBA

Laura Starkston: Concave contact boundaries and contact toric manifolds

Abstract. We study contact manifolds at the overlap of two sources: (1) concave boundaries of a symplectic plumbing of disk bundles over symplectic surfaces and (2) contact toric manifolds. Our goal is to investigate properties of the contact structures, such as overtwistedness, tightness, fillability, and algebraic torsion measurements. We will discuss our current results, and hopes for generalizations. This talk is based on joint work in progress with Aleksandra Marinković, Jo Nelson, Ana Rechtman, Shira Tanny, and Luya Wang.

Vukašin Stojisavljević: TBA

Abstract. TBA

Maksim Stokić: C^0 flexibility of Legendrian discs

Abstract. Let $\Lambda \subset (Y, \xi)$ be a Legendrian submanifold, and let $\phi : Y \rightarrow Y$ be a contact homeomorphism such that $\phi(\Lambda)$ is a smooth submanifold of Y . The question I will discuss in my talk is: must $\phi(\Lambda)$ be Legendrian? I will provide a negative answer when Λ is a Legendrian disc. Specifically, I will construct a compactly supported contact homeomorphism of \mathbb{R}^5 with the standard contact structure, which maps a Legendrian disc to a smooth, nowhere Legendrian disc.

Frol Zapolsky: TBA

Abstract. TBA

Fabian Ziltener: Infinitesimal Hamiltonian displacement and symplectic squeezing for a set with vanishing critical Hausdorff measure

Abstract. This is joint work with Yann Guggisberg. We show that an n -rectifiable compact subset of R^{2n} with vanishing n -dimensional Hausdorff measure can be displaced from itself by a Hamiltonian diffeomorphism arbitrarily close to the identity. As a consequence, such a set can be symplectically embedded into an arbitrarily small neighborhood of the origin in R^{2n} .

Filip Živanović: Classifying exact Lagrangians in hyperkähler manifolds

Abstract. In this talk, we will discuss some results and ideas towards the classification of exact Lagrangian submanifolds inside hyperkähler manifolds which admit contracting \mathbb{C}^* -actions. We will mention particular examples of A_n -resolutions and their generalisations, hypertoric varieties.