Northern California Symplectic Geometry Seminar

Berkeley – Davis – Santa Cruz – Stanford

Monday, April 1st, 2024

at Stanford

2:30–3:30pm, room 380D

Yoel Groman (Hebrew University)

Relative symplectic cohomology and quantitative deformation theory

Abstract: Consider a Liouville domain D embedded in a closed symplectic manifold M. To D one can associate two types of Floer theoretic invariants: intrinsic ones like the wrapped Fukaya category which depend on D only, and relative ones which involve both D and M. It is often the case that the intrinsic invariant is amenable to computation. On the other hand, the relative invariants are important, at least in SYZ mirror symmetry, as one can reconstruct the global Floer theory by a local to global principle. Thus it is a fundamental question if the relative invariants can be understood as a deformation of the intrinsic invariant. It turns out the question need to be approached quantitatively. By shrinking the Liouville domain, the answer is often positive. This circle of ideas is at the heart of a program joint with Mohammed Abouzaid and Umut Varolgunes for a general approach to homological mirror symmetry. I will discuss a work in progress on the application of this circle of ideas to the reconstruction problem in mirror symmetry via relative symplectic cohomology.

3:30–4:00pm — Tea Break

4:00–5:00pm, room 383N

Felix Schenk (Université de Neuchâtel)

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.