

Northern California Symplectic Geometry Seminar

BERKELEY – DAVIS – SANTA CRUZ – STANFORD

Monday, October 2, 2023
at Berkeley

2:30–3:30, room 736 Evans

Roger Casals (UC Davis)

A program to classify Lagrangian fillings of Legendrian links (Floer memorial lecture)

Abstract: This talk will present recent advances on the study of embedded exact Lagrangians in the standard Darboux 4-ball. We will discuss a three step strategy to classify Hamiltonian isotopy classes of Lagrangian fillings of Legendrian links. The main results for the two first steps, existence and surjectivity, have now been established for a wide class of Legendrians. I will discuss the statements and the geometric insights of their proofs in detail. The techniques combine a range of new ideas, including weaves, understanding topological polygons in surfaces, and the study of infinitesimal deformations of quivers with potential. We will motivate these arguments with examples and build the ideas from the ground up. At the end, there will be comments on the general case and the third step, injectivity, which closely relates to the study of Lagrangian skeleta for Weinstein 4-manifolds.

3:30–4:00 — Tea Break

4:00–5:00, room 748 Evans

Thomas Massoni (Princeton)

Taut foliations through a contact lens

Abstract: In the late '90s, Eliashberg and Thurston established a remarkable connection between foliations and contact structures in dimension three: any co-oriented, aspherical foliation on a closed, oriented 3-manifold can be approximated by positive and negative contact structures. Additionally, when the foliation is taut, its contact approximations are (universally) tight.

In this talk, I will present a converse result concerning the construction of taut foliations from suitable pairs of contact structures. I will also describe a comprehensive dictionary between the languages of foliations and of (pairs of) contact structures.

Although taut foliations are usually considered rigid objects, this contact viewpoint reveals some degree of flexibility. As an application, I will show that taut foliations survive after performing large slope surgeries along transverse knots.

There will be dinner in downtown Berkeley following the talks.

Organizers: M. Abouzaid, R. Casals, Y. Eliashberg, D. Fuchs, V. Ginzburg, M. Hutchings, E. Ionel, R. Montgomery, V. Shende, L. Starkston, K. Wehrheim, A. Weinstein