

Northern California Symplectic Geometry Seminar

BERKELEY – DAVIS – SANTA CRUZ – STANFORD

Monday, November 4, 2024
at Berkeley

2:30–3:30, room 939 Evans

Julian Chaidez (USC)

Robustly non-convex hypersurfaces in contact manifolds

Abstract: A fundamental theorem of Giroux states that every closed surface in a contact 3-manifold can be smoothly approximated by a convex surface. Recently, Honda-Huang partially generalized Giroux's theorem to higher dimensions, by proving that any hypersurface in a contact manifolds can be continuously approximated by a convex one.

In this talk, I will explain a proof that Giroux's theorem is false in higher dimensions. Precisely, there are hypersurfaces in any contact manifold of dimension five or greater that cannot be smoothly approximated by convex hypersurfaces. The main technical step is the construction of a Bonatti-Diaz type blender in the contact setting.

3:30–4:00 — Tea Break

4:00–5:00, room 732 Evans

Eric Kilgore (Stanford)

Legendrian non-squeezing via microsheaves

Abstract: In this talk I will explain some quantitative embedding results for Legendrian submanifolds of pre-quantization spaces. To start, I will recall some contact non-squeezing results for domains, and present an elementary proof of Legendrian non-squeezing for lifts of integral Lagrangian loops in $T^*\mathbb{R}$, using a notion of normal ruling. Then I will explain a high dimensional generalization of this technique in the language of microsheaves. If time permits, as an application, I will show that the Legendrian lifts of certain Clifford and Chekanov tori are not squeezable.

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