

Northern California Symplectic Geometry Seminar

BERKELEY – DAVIS – SANTA CRUZ – STANFORD

Monday, Dec 7, 2015 at STANFORD

2:30–3:30, room 384H

Oleg Lazarev (Stanford)

Contact Manifolds with Flexible Fillings

Abstract: Contact manifolds with subcritical Weinstein fillings remember much about the topology of their fillings. I will extend this to the critical setting and show that all flexible fillings of a given contact manifold have the same homology. In the process, I will demonstrate how to increase the degrees of Reeb chords of loose Legendrians and Reeb orbits of contact manifolds with flexible fillings. As an application, I will show that any almost contact manifold of dimension at least 5 with an almost Weinstein filling has in finitely many distinct Weinstein-fifiable contact structures in the same formal class. In the special case of the standard almost contact structure on the sphere, this answers a question of Kwon and van Koert.

3:30–4:00 — Tea Break, 4th floor lounge

4:00–5:00, room 383N

Dan Rutherford (Ball State University)

Cellular computation of Legendrian contact homology in dimension 2

Abstract: This is joint work with Mike Sullivan. We consider a Legendrian surface, L , in \mathbb{R}^5 (or more generally in the 1-jet space of a surface). Such a Legendrian can be conveniently presented via its front projection which is a surface in \mathbb{R}^3 that is immersed except for certain standard singularities. We associate a differential graded algebra (DGA) to L by starting with a cellular decomposition of the base projection (to \mathbb{R}^2) of L that contains the projection of the singular set of L in its 1-skeleton. A collection of generators is associated to each cell, and the differential is determined in a formulaic manner by the nature of the singular set above the boundary of a cell. Our cellular DGA is equivalent to the Legendrian contact homology DGA of L whose construction was carried out in this setting by Etnyre-Ekholm-Sullivan with the differential defined by counting holomorphic disks in C^2 with boundary on the Lagrangian projection of L . Equivalence of our DGA with LCH is established using work of Ekholm on gradient flow trees. Time permitting, we will discuss constructions of augmentations of the cellular DGA from two parameter families of functions.

There will be dinner at 6:00pm

—D. Auroux, Y. Eliashberg, D. Fuchs, V. Ginzburg, M. Hutchings, E. Ionel, R. Montgomery, K. Wehrheim, A. Weinstein