Northern California
Symplectic Geometry Seminar

Berkeley – Davis – Santa Cruz – Stanford

Monday, March 7th, at Stanford

2:30–3:30pm, room 383N
Jeremy Van Horn-Morris (AIM)
“Spinal open books and symplectic fillings”

Abstract: A theorem of Chris Wendl allows you to completely characterize symplectic fillings of genus 0 open book decompositions by factorizations of their monodromy into Dehn twists. Olga Plamenevskaya and I use this to generalize results of Eliashberg, McDuff and Lisca to classify the fillings of certain Lens spaces. I’ll discuss this and a newer version of Wendl’s theorem, joint with Wendl and Sam Lisi, this time for spinal open books, and a few more applications.

3:30–4:00pm — Tea Break, 2nd floor lounge

4:00–5:00pm, room 383N
Henry Jacobs (Caltech)
“Interconnection of Lagrange-Dirac Dynamical Systems”

Abstract: Dirac structures were invented by Theodore Courant and Alan Weinstein as a generalization of Symplectic and Poisson structures. Later, Jerrold Marsden and Hiroaki Yoshimura laid out how Lagrangian mechanics could be understood through Dirac structures and expanded to cases where Lagrangian mechanics could not go before. It was observed by many that energy conserving interconnections could be represented with Dirac structures. However, the means by which this interconnection Dirac structure enforced the interconnection of two Lagrangian systems is still not widely agreed upon. This past year Pf. Yoshimura, Jerrold Marsden and I have defined operators on the set of Dirac structures that make the use of Interconnection Dirac structures and make a case for general interconnection systems with dynamics given by Dirac structures. Our goal is to describe how a Dirac structure may be used to connect two Dirac-Lagrange systems and apply this to a number of examples. Additionally we desire to discretize this theory to get a generalization of Discrete Lagrangian Mechanics. This will have applications to parallellizable variational integrators for mechanical systems as well as for code-reuse.

There will be a dinner at 6pm.

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