

Northern California Symplectic Geometry Seminar

BERKELEY – DAVIS – SANTA CRUZ – STANFORD

Monday, April 4, 2011

BERKELEY, Room 736 Evans Hall

2:30–3:30

Tobias Ekholm (Uppsala University)

Legendrian contact homology of conormal lifts

The (unit) conormal lift of a submanifold $M \subset X$ is a Legendrian submanifold Λ_M in the unit conormal bundle of X with the contact structure of the action 1-form. The Legendrian contact homology of Λ_M is an isotopy invariant of M . In the case of knots in \mathbb{R}^3 we show that the Legendrian contact homology agrees with the combinatorially defined knot contact homology of L. Ng, confirming Ng’s conjecture. Furthermore, we discuss an invariant of transverse links in \mathbb{R}^3 that arises from a natural filtration on the Legendrian algebra of their conormal lifts and survey some results for submanifolds in higher dimensions.

3:30-4:00 in 1015 Evans Hall

Tea break

4:15–5:15

Santiago Cañez (UC Berkeley)

Double Groupoids and the Symplectic Category

Quantization considerations suggest that the “correct” notion of morphism between symplectic manifolds should include not only symplectic maps but more generally *canonical relations*, which are lagrangian submanifolds of certain products of symplectic manifolds. This idea leads to the construction of what is known as the *symplectic category*. It is well known that this is not a true category, since compositions may not exist, and yet this point of view turns out to be extremely useful. In particular, certain notions in symplectic geometry, such as that of a Hamiltonian action or that of a symplectic groupoid, have simple “categorical” characterizations in terms of the symplectic category. We will review some of these characterizations, and present some new results concerning a characterization of *symplectic double groupoids* in this language. This talk should for the most part be self-contained; in particular, we will recall the definitions of “groupoid” and “double groupoid” as needed.

Please contact alanw@math.berkeley.edu as soon as possible to arrange parking.

There will be a dinner at 6pm

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