

Northern California Symplectic Geometry Seminar

BERKELEY – DAVIS – SANTA CRUZ – STANFORD

Monday, November 1, 2010

BERKELEY, Rooms 39 and 740 Evans Hall

2:30–3:30 in 39 Evans Hall

Sean Fitzpatrick (UC Berkeley)

“Geometric quantization in contact geometry”

In symplectic geometry, geometric quantization is an old story. Depending on one’s taste, it can be described in terms of prequantum line bundles and polarizations, or in terms of the index of a suitable Dirac operator. There are descriptions of quantization for contact manifolds at least as early as the book of Boutet de Monvel and Guillemin in 1981 (and the series of papers by Guillemin and Sternberg that followed on the quantization of symplectic cones). However, these - as well as later work on this subject - do not exactly resemble the familiar story in symplectic geometry.

To remedy this, I will describe two different approaches to what might be considered the geometric quantization of a contact manifold. One will involve contact analogues of the prequantum line bundle and (complex) polarization, while the other involves the index of a (non-elliptic) Dirac operator. Both approaches rely upon a certain amount of CR geometry, and although the resulting answers are similar, they are not quite the same. Along the way, I’ll describe (just for fun) what could be called the “Poisson algebra” associated to a choice of contact form.

3:30-4:00 in 1015 Evans Hallk

Tea break

4:15–5:15 in 740 Evans Hall

Alex Subotic (Stanford)

“Homological mirror symmetry and triangulated tensor categories”

Homological mirror symmetry is a conjectural equivalence between derived Fukaya categories of certain symplectic manifolds and derived categories of coherent sheaves of their mirror spaces. We will discuss how one may be able to understand the existence of these mirror spaces and the resulting categorical equivalences in terms of tensor structures on derived Fukaya categories.

Please contact alanw@math.berkeley.edu at least one week in advance 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