Northern California
Symplectic Geometry Seminar

BERKELEY – DAVIS – SANTA CRUZ – STANFORD

Monday, May 7, 2012
BERKELEY, 740 EVANS HALL

2:30–3:30
Başak Gürel (Vanderbilt)
Action-index relations for Hamiltonian dynamical systems

Abstract: In this talk, we will discuss a rigidity feature for Hamiltonian diffeomorphisms with finitely
many periodic orbits. Namely, we show that, under suitable assumptions on the ambient manifold, the
actions and mean indices of periodic orbits of such a diffeomorphism must satisfy certain relations. This
talk is based on joint work with Chance and Ginzburg.

3:30–4:15
Tea Break (not in Evans Hall)

4:15–5:15
Alan Weinstein (UC Berkeley) The Maslov cycle as singular support of quantization

Abstract: In the lagrangian grasmannian Λ of lagrangian subspaces in $T^*\mathbb{R}^n$, the elements which have
nonzero intersection with the fibre over 0 form a codimension 1 cooriented subvariety $Σ$ with singular set
of codimension 3 in $Λ$. $Σ$ is called the Maslov cycle, as it is dual to the Maslov class in $H^1(Λ, \mathbb{Z})$.

According to Givental (who proved a much more general result), $Σ$ is the image under the cotangent
projection of a smooth, conic lagrangian submanifold $S$ in the cotangent bundle of $Λ$ with the zero section
removed. In this talk, I will describe a distribution (i.e. generalized function) $φ$ on $Λ$ whose singular
support is $Σ$ and whose wave-front set is $S$.

$φ$ is, in fact, a Fourier integral distribution attached to $S$. I will make some remarks on the Maslov class
of $S$, which determines the bundle where the principal symbol of $φ$ takes its values, and on the regularity
properties of $φ$.

Finally, I will explain how the results above fit into a larger program of describing “impossible opera-
tions” on distributions as generalized functions on spaces of distributions.

Please contact alanw@math.berkeley.edu to arrange parking.

There will be a dinner at 6:00

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