Northern California Symplectic Geometry Seminar

BERKELEY – DAVIS – SANTA CRUZ – STANFORD

Monday, March 1st, 2021

at Stanford (virtually)

1–2pm, on Zoom

Tobias Ekholm (Uppsala University)

Skein module curve counts and recursion

Abstract: Counting holomorphic curves in a Calabi-Yau 3-fold X with Maslov zero Lagrangian boundary condition L by their boundaries in the framed skein module of L gives a deformation invariant quantity. We review this construction briefly and compare the resulting invariants to real Gromov-Witten invariants when there is an involution. We then study the toric brane in complex 3-space and knot conormals. Here we show that holomorphic curves on the Legendrian which is the ideal boundary of the Lagrangian stores the information of the curve count in terms of a skein valued recursion relation, which is comparatively easy to compute. The talk reports on joint works with Penka Georgieva, Lenhard Ng, and Vivek Shende.

2:30–3:30pm, on Zoom

Daniel Cristofaro-Gardiner (UC Santa Cruz and IAS)

PFH spectral invariants on the two-sphere and the large scale geometry of Hofer's metric

Abstract: The group of Hamiltonian diffeomorphisms of a symplectic manifold admits a remarkable bi-invariant metric, called Hofer's metric. My talk will be about a recent joint work with Vincent Humilière and Sobhan Seyfaddini resolving the following two open-questions related to the geometry of this metric. The first, due to Kapovich and Polterovich, asks whether the two-sphere, equipped with Hofer's metric, is quasi-isometric to the real line; we show that it is not. The second, due to Fathi, asks whether the group of area and orientation preserving homeomorphisms of the two-sphere is a simple group; we show that it is not. Key to our proofs is a new sequence of spectral invariants defined via Hutchings' Periodic Floer Homology.

Please contact ionele@stanford.edu for the Zoom info.

Organizers: R. Casals, Y. Eliashberg, D. Fuchs, D. Gardiner, V. Ginzburg, M. Hutchings, E. Ionel, R. Montgomery, V. Shende, L. Starkston, K. Wehrheim, A. Weinstein