

Northern California Symplectic Geometry Seminar

BERKELEY – DAVIS – SANTA CRUZ – STANFORD

Monday, November 2nd, 2020

at UC Davis (virtually)

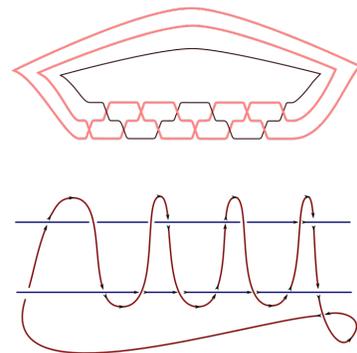
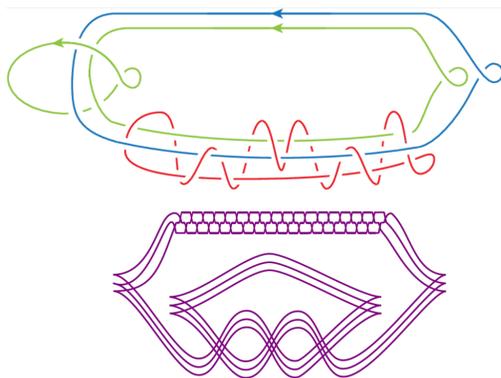
2:30–3:30pm, on Zoom

John Etnyre (Georgia Institute of Technology)

Legendrian cables

Abstract: Legendrian and transverse knots have played a large role in the development of 3 dimensional contact geometry, and studying Legendrian and transverse representatives of torus knots and cable knots has played a large role in our understanding of the general behavior of Legendrian and transverse knots. In this talk I will discuss some recent progress in the area. In particular, I will discuss joint work with Jennifer Dalton and Lisa Traynor about torus links and cable links.

For example, for nice knot types (uniform thick) we show that when considering the symmetries of Legendrian cables all topological symmetries, only cyclic symmetries, or no symmetries are allowed if the cabling slope is larger than, less than, or equal to the maximal Thurston-Bennequin invariant, respectively (and all the components have maximal Thurston-Bennequin invariant). This is one of the first classifications of infinite families of Legendrian links where restrictions on symmetries are present. We will also discuss joint work with Apratim Chakraborty and Hyun Ki Min that completely describes Legendrian representatives of large positive cable knots in terms of the underlying knot as well as explain the phenomena of Legendrian large cables. The latter, which were discovered in a beautiful but mysterious construction of Yasui, are Legendrian representatives of a cabled knot type with Thurston-Bennequin invariant larger than that was classically expected.



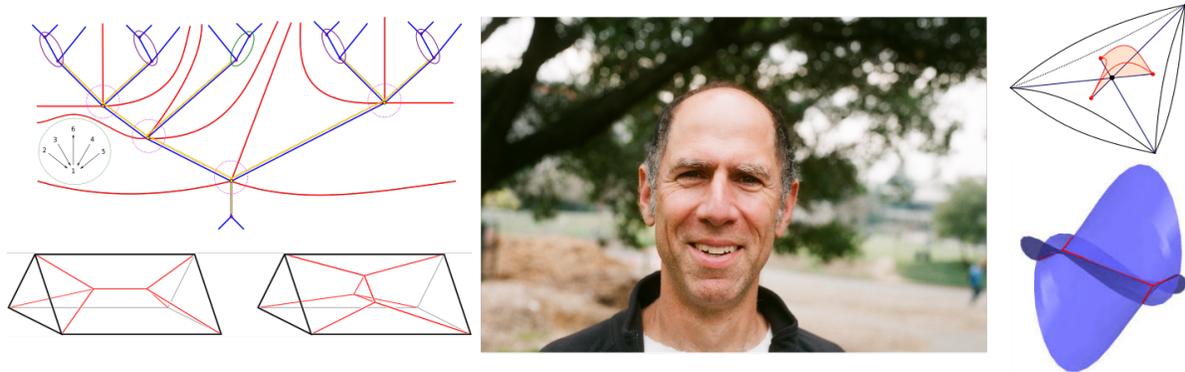
4:00–5:00pm, on Zoom

Eric Zaslow (Northwestern University)

Branes, Wavefunctions, Sheaves, Clusters

Abstract: I will try to weave together ideas of many physicists and mathematicians into a semi-coherent mathematical yarn. We identify the wavefunction of a Lagrangian brane with a potential function for its moduli space, then interpret it as the generating function for open Gromov-Witten invariants. For a particular class of branes, we relate these to quiver invariants as well – the quiver depending, curiously, on a “framing”.

The mathematical setting is a Legendrian surface defined by a planar triangulation and the moduli space of constructible sheaves microsupported on it. This moduli space is a Lagrangian subspace inside a symplectic leaf of a cluster variety that has a quantization, one chart of which is described by the triangulation. The defining function for the corresponding ideal is conjecturally the all-genus open Gromov-Witten generating function for a non-exact Lagrangian filling depending on the framing. Placing the problem in the context of clusters allows one to exploit mutations to transfer knowledge from a patch where the wavefunction is known to patches where it is not, providing a scheme for calculation. This is work in progress with Linhui Shen.



Please contact casals@ucdavis.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.