

# KYLEREC 2019

## Sheafy Symplectic Topology

May 31- June 6, 2019  
Truckee, CA

**Format** Kylerec is a student-led and student-run workshop. We will live in a communal setting, sharing cooking and cleaning responsibilities. Talks will be given by a majority of participants, with guidance from our mentors. Our vision is to foster a healthy, relaxed and creative atmosphere where we can learn mathematics together and make human connections in the process. Graduate students at any stage are encouraged to apply. We especially encourage applications from women, underrepresented minorities, and we are committed to providing assistance to students with disabilities or special needs

**Description** This year, we will investigate the relationship between the Fukaya categories of exact symplectic manifolds and sheaf theory. Fukaya categories are a central part of modern symplectic topology, mirror symmetry and low-dimensional topology, however they remain very difficult to compute. On the other hand, categories of constructible sheaves are much more concrete and tractable. In the case of a cotangent bundles, the work of Nadler-Zaslow identifies the wrapped Fukaya category with a certain category of sheaves on the zero-section. For more general Weinstein manifolds, it is conjectured that one can find a Lagrangian skeleton, generalising the zero-section of a cotangent bundle, with at worst singularities from Nadler's arboreal list. The wrapped Fukaya category is then expected to coincide with a category of sheaves on this skeleton. In particular, this suggests Fukaya categories should themselves exhibit sheafy properties: they might be reconstructed by breaking a symplectic manifold into pieces and gluing together local computations. One approach to doing this is provided by the work of Ganatra-Pardon-Shende, with many important structural implications for wrapped Fukaya categories.

This workshop will survey this circle of ideas. After covering the basics of Floer theory, the Fukaya category and sheaf theory, we will delve into the work of Nadler-Zaslow and Ganatra-Pardon-Shende. We hope to see lots of interesting examples, calculations and applications along the way, in particular the aforementioned arboreal singularities. This should be of great interest to both newcomers to the symplectic and contact geometry, and more advanced graduate students.

The workshop will be mentored by Sheel Ganatra (USC), Xin Jin (Boston College), Laura Starkston (UC Davis), and Umut Varolgunes (Stanford).

**Organizers** Orsola Capovilla-Searle (Duke), Dahye Cho (StonyBrook), Cédric De Groote (Stanford), Tim Large (MIT), and Sarah McConnell (Stanford).

We are grateful to the NSF for their support. Local expenses (including lodging and food) and partial travel expenses will be covered for participants.

Contact: [kylerec2019@gmail.com](mailto:kylerec2019@gmail.com) Webpage: <https://kylerec.wordpress.com/> Photo by Alvin Jin.