

Talk Title: The genus filtration on the surface modular operad

Abstract: The classifying spaces of diffeomorphism groups of surfaces assemble into a modular ∞ -operad, closely related to the 2-dimensional bordism category. I will explain how algebras over this surface modular operad can be constructed inductively on the genus, with the extension from $g - 1$ to g being controlled by the curve complex $\mathcal{C}(\Sigma_g)$.

For invertible algebras this yields a spectral sequence with E_1 -page given by unstable homology of mapping class groups, which converges to the spectrum homology of MTSO_2 . The required cancellations in this spectral sequence imply for instance that the top-dimensional homology group $H_{14}(\Gamma_5)$ has at most rank 2.