UNIVERSITY AT ALBANY
State University of New York

College of Arts and Sciences
Department of Mathematics and Statistics

Applied Topology in Albany (ATiA) Seminar

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Filtrations of smooth manifolds from maps to the plane

Friday, October 22nd, 2021
11:00 a.m. on Zoom

Abstract. Given a smooth map from a manifold to the plane, and some poset structure on the plane, one can take the pre-images of the planar subsets to get a poset structure on the manifold. In this talk I will outline how one can compute the homotopy-type of the poset structure (provided the poset on $\mathbb{R}^2$ is smooth-enough) in terms of cellular attachments. In the case of the bi-filtration of the plane by "quadrants" $(-\infty, a] \times (-\infty, b]$ this gives us a description of the homotopy-type of the bi-filtration of the manifold, analogous to classical Morse theory.