Topology Seminar

Kirsten Wickelgren

of Harvard University will be speaking on

Étale π_1 obstructions to homotopy sections of curves

on October 26 at 4:30 in
MIT Room 2-131

Grothendieck's anabelian conjectures say that hyperbolic algebraic curves over number fields should be $K(\pi, 1)$'s in algebraic geometry. It follows that conjecturally the rational points on such a curve are the sections of étale π_1 of the structure map. These conjectures are analogous to equivalences between fixed points and homotopy fixed points of Galois actions on related topological spaces. We use cohomological obstructions of Jordan Ellenberg coming from nilpotent approximations to the curve to study the sections of étale π_1 of the structure map. We will relate Ellenberg's obstructions to Massey products, and explicitly compute mod 2 versions of the first and second for $P^1 - \{0, 1, \infty\}$ over $\mathbf{Q}$. Over $\mathbf{R}$, we show the first obstruction alone determines the connected components of real points of the curve from those of the Jacobian.