

BRANDEIS UNIVERSITY

Everytopic Seminar

Friday, September 25

in room 226 at 1:40pm

Anabelian geometry and obstructions
to homotopy sections

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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. The talk will start with an introduction to the étale fundamental group, Grothendieck's anabelian conjectures, and their topological analogues. In the second half of the talk, we'll 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'll discuss results relating Ellenberg's obstructions to Massey products, explicitly computing local mod 2 versions of the first and second for $\mathbf{P}^1 - \{0, 1, \infty\}$, and showing that over \mathbf{R} the first of these obstructions determines the sections.