

Mentor Lecture Series

Organizer: Daniel Erman and Bianca Viray

Monday, 4:10–5:00pm, 60 Evans

Oct. 2 **Martin Olsson**, UCB

The fundamental group and Galois theory.

One early triumph of Grothendieck’s approach to algebraic geometry in the 1960’s was the invention of the “étale fundamental group”. For varieties defined over number fields (such as \mathbb{Q}), this theory endows the topological fundamental group (more precisely its profinite completion) with a rich arithmetic structure which to this day remains very mysterious.

While the development of the general theory of the étale fundamental group requires a substantial amount background, in the case of curves one can describe everything using Galois theory. In this talk I will explain this connection, and discuss some theorems and open problems.

The Mentor Lecture Series is designed for first and second year graduate students. The series aims to acquaint beginning graduate students with potential dissertation supervisors whom they might not otherwise closely encounter, and to impart a taste of research activity in the mathematics department in order to help beginning students choose fields of specialization.