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Topology Seminar at Texas State

<u>When</u>: 11:00-12:20, Friday, March 6, 2020
<u>Where</u>: Derrick Hall 333

Speaker: Wade Hindes

Topic: *An introduction to Galois representations*

ABSTRACT

Loosely speaking (according to Scholze), the goal of "Condensed Mathematics" is to give a unified approach to the problem of doing algebra when the rings, modules, and groups of interest carry a topology. Such a project is useful for number theorists, since many of the most important objects in arithmetic carry several different topologies (complex, profinite, Zariski…) at once.

In this talk, we illustrate this interplay between arithmetic and topology via the theory of Galois Representations. In particular, we will give a basic introduction to Galois representations with an emphasis on examples (especially elliptic curves). As a result, we hope to convey how some of the deepest problems in arithmetic (like Fermat's Last Theorem, the Fontaine-Mazur Conjecture, and the B.S.D Conjecture) are related to understanding how Galois groups act continuously on cohomology groups coming from geometry.