

Philadelphia Area Number Theory Seminar

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Serre curves relative to obstruction modulo 2

Abstract: Let E be an elliptic curve defined over \mathbb{Q} . Fix an algebraic closure $\overline{\mathbb{Q}}$ of \mathbb{Q} . We get a Galois representation

$$\rho_E: \text{Gal}(\overline{\mathbb{Q}}/\mathbb{Q}) \rightarrow \text{GL}_2(\hat{\mathbb{Z}})$$

associated to E by choosing compatible bases for the N -torsion subgroups of $E(\overline{\mathbb{Q}})$. In this talk, I will discuss my recent work joint with Jacob Mayle where we consider elliptic curves E defined over \mathbb{Q} for which the image of the adelic Galois representation ρ_E is as large as possible given a constraint on the image modulo 2. For such curves, we give a characterization in terms of their ℓ -adic images, compute all examples of conductor at most 500,000, precisely describe the image of ρ_E , and offer an application to the cyclicity problem. In this way, we generalize some foundational results on Serre curves.

Wednesday, January 25, 2023

2:00{4:00 PM

Temple University

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Wachman Hall, Room **414**

Informal refreshments at 2:00PM { Talk at 2:30PM