

Introduction to the overall project: Conjoining group cohomology, arithmetic and moduli

There will be four surveys of 50 minutes each:

- **Debes:** Introduction to Modular Towers
- **Cadore:** Abelianized Modular Towers
- **Fried:** A meaning for the phrase "Profinite Arithmetic Geometry"
- **Ribet:** An introduction to Serre's work on Galois groups attached to division points on elliptic curves over number fields

Regular Inverse Galois Problem considerations at the conference take two forms: Moduli spaces whose points correspond to types of realizations; and cohomological properties of quotients of absolute Galois groups.

Layout of the Conference Days:

- **Monday:** Morning–Conference Commencement, Afternoon–Diophantine Geometry
- **Tuesday:** Morning–Abelian Varieties, Afternoon–Related moduli spaces
- **Wednesday:** Start of Group theory connection to moduli spaces
- **Thursday:** Morning-Modular Towers and the Inverse Galois Problem, Afternoon-Cohomological algebra
- **Friday:** Some Program Goals

Inverse Galois Example of Talk Connections

- Serre's Open Image Theorem and the Strong Torsion Conjecture
- Projective, p -projective and Demûskin groups, applied to absolute Galois groups ($G_{\mathbb{Q}}$, too)
- Motivic integrals and Chebotarev density ; rational points on moduli spaces
- Demûskin groups for detecting modular curve-like aspects of moduli components and cusps
- Diophantine implications from analyzing cusps on Drinfeld, Hurwitz and Shimura spaces
- Modular Towers (MTs): Structured interpretation of the RIGP