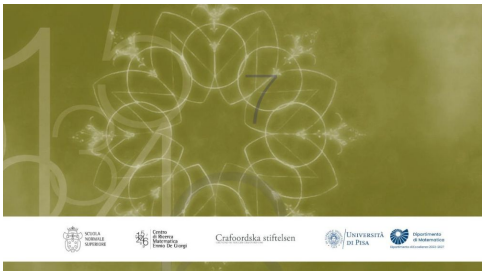

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Brauer groups and (non-negligible) cohomology classes on moduli of curves via theta characteristics

Wednesday, 1 October 2025 14:30 (1 hour)

In joint work with Andrea di Lorenzo we computed the Brauer groups of the moduli stacks of genus three curves and abelian varieties of dimension three. A crucial step involved constructing explicit classes by leveraging odd theta characteristics and the map they induced to the moduli stack of étale algebras of degree 28. Three problems remained open: computing the pullback map from the Brauer group of the moduli stack of genus three curves to that of hyperelliptic genus three curves, computing the full cohomological invariants of the moduli stack of genus three curves, and whether theta characteristics induce higher nontrivial cohomology classes for higher genus.
In this talk I will describe recent joint work with Andrés Jaramillo Puentes where we answer the first and third question, showing that the pullback between Brauer groups is injective and producing new mod 2 cohomology classes (of degree 2^(g-1)) on the moduli stacks of genus g curves and dimension g abelian varieties over a totally real field.
These classes are, borrowing a term from Serre's study of group cohomology, non-negligible, and in particular cannot come from the cycle map.

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