Title: Non-constant genus 2 curves with pro-Galois covers

Abstract:

The considerations in this talk are motivated by the following general problem: Consider a specific kind of fields (e.g. algebraically closed, local or finitely generated) as well as all (smooth, geometrically irreducible) curves over these fields of a prescribed genus. Does then under all these fields and curves exist a curve C over a field K which allows an unramified infinite tower $\longrightarrow C_i \longrightarrow \cdots \longrightarrow C$ of non-trivial unramified covers such that each C_i is a (smooth, *geometrically irreducible*) curve over K and the covers $C_i \longrightarrow C$ are all Galois?

In this talk the case of genus 2 curves over finitely generated fields is considered. It is shown that for each odd prime number p there exists a non-constant (non-isotrivial) genus 2 curve over a global field of characteristic p which allows such a tower.

The talk is based on joint work with G. Frey.