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The fundamental group of smooth affine curves in positive characteristic

The étale fundamental group of smooth curves defined over complex numbers (or any algebraically closed field of characteristic 0) are easy to compute thanks to topology and Riemann's existence theorem. But the scenario is very different if the characteristic is nonzero. For instance, the fundamental group of a smooth affine curve in positive characteristic is not even (topologically) finitely generated. This is because in positive characteristic one could have many types of wild ramifications at the boundary. In fact, in this talk we shall see if the base field is countable algebraically closed field then the commutator subgroup of the étale fundamental group of any smooth affine curve turns out to be profinite free group over countably many variables. The proof is Galois theoretic and uses formal patching techniques.