

**Speaker:** Christophe Levrat

**Title:** Computing the cohomology of  $\pi_1$ -modules trivialised by hyperelliptic covers

**Abstract.** Consider an unramified Galois covering  $Y \rightarrow X$  of smooth projective curves over  $\overline{\mathbb{F}}_p$ . Given a  $\text{Gal}(Y|X)$ -module  $M$ , we study the question of explicitly computing the first cohomology group  $H^1(\pi_1(X), M)$ . This talk will focus on the case where  $Y$  is hyperelliptic, which is far easier than the general case thanks to the wealth of existing algorithms allowing to compute in the Jacobian or count points on the curve. We will present a method which allows to answer our question with a satisfying complexity in theory, as well as our recent efforts to implement an algorithm answering it in practice.