

Online Number Theory Seminar

15 September 2023. – 17:00-17:50

Samir Siksek : The unit equation over \mathbb{Q}_∞

Let p be a prime. In this talk we review the \mathbb{Z}_p cyclotomic extension of \mathbb{Q} (often denoted by \mathbb{Q}_∞), and what is known or conjectured regarding Diophantine equations over \mathbb{Q}_∞ . In particular, and contrary to expectations, we show that the unit equation can have infinitely many solutions over \mathbb{Q}_∞ . We use this fact to construct infinite families of hyperelliptic curves, defined over \mathbb{Q}_∞ , with good reduction away from 2 and p , thereby showing that the Shafarevich conjecture does not generalise to this setting. This talk is based on joint work with Robin Visser.