Transcendental properties of the Artin-Hasse exponential modulo p

The Artin-Hasse exponential is a p-adic analogue to the classical exponential function. It is ubiquitous in p-adic analysis, where it plays a pivotal role in the construction of Witt vectors and in Dwork theory. The miracle of the Artin-Hasse exponential is that its Taylor expansion has p-integral coefficients, and thus may be reduced modulo p. In this talk I will discuss recent work on the transcendental properties of the Artin-Hasse exponential mod p. We give two proofs that the Artin-Hasse exponential mod p is transcendental, answering a long-outstanding question posed by Thakur. We also explain several algebraic independence results for the Artin-Hasse exponential evaluated at different polynomials.