

# POINT COUNTS ON ELLIPTIC SURFACES INSPIRED BY THE THEORY OF MOTIVES

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Computation of the number of points on surfaces over finite fields is a task that requires a good understanding of the Picard group of the surface and the transcendental lattice. In this talk we will explain how to obtain closed form formulas for the point count on elliptic rational and K3 surfaces using techniques from the theory of motives. As a main tool we use the formalism of hypergeometric motives and the Shioda-Inose structures. As an application we will prove finite field analogues of some classical identities among hypergeometric power series and certain congruences on the coefficients of modular forms.