

Construction of Tate Cycles on Certain Unitary Shimura Varieties over Finite Fields

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Abstract

Let F be a quadratic real field, and E/F be a CM extension. Let p be a prime number inert in F and split in E . Consider a Shimura variety of PEL type associated to a unitary group over \mathbb{Q} of Archimedean type $G(U(1, n-1) \times U(n-1, 1))$, and denote by X its fiber in characteristic p . We will construct n series of algebraic cycles in X such that each of them is parametrized by another unitary Shimura variety of type $G(U(0, n) \times U(n, 0))$. We conjecture that in the generic case, these cycles give rise to almost all obvious Tate cycles on X . We verify this conjecture for $n < 5$. This is a work in progress joint with Liang Xiao and David Helm.