

Special cycles on Shimura varieties

Wei Zhang

February 6, 2007

We will discuss, on some Shimura varieties, algebraic cycles that come from sub-Shimura varieties and their Hecke translations. The typical examples are Heegner points on a modular curve or Shimura curve, Hirzebruch-Zagier divisors on a Hilbert modular surface, and other high (co-)dimensional cycles. We'll prove that the space of special cycles is finite dimensional and the conjecture by Kudla that the generating functions of these special cycles are Siegel modular forms, generalizing the theorem of Gross-Kohnen-Zagier, Hirzebruch-Zagier, and Borcherds.