

Meeting: 1007, Santa Barbara, California, SS 13A, Special Session on Arithmetic Geometry

1007-11-28 **B.D. (Byoung-du) Kim*** (byoung@math.stanford.edu), Department of Mathematics, Stanford University, Stanford, CA 94305. *The Parity Conjecture of Elliptic Curves and Algebraic Functional Equations at Primes with Supersingular Reduction.*

In number theory and arithmetic geometry, we expect an algebraic object such as a Mordell-Weil group of an abelian variety and an analytic object such as an L -function of an abelian variety are inherently related. A classic example of this belief is the Birch and Swinnerton-Dyer (BSD) conjecture. The BSD conjecture predicts that the rank of a Mordell-Weil group of an elliptic curve is equal to the order of zero at $s = 1$ of an L -function of the same elliptic curve. Its modulo 2 version, the parity conjecture, is a good evidence of the BSD conjecture if proved. In this paper, we prove the parity conjecture when p is a good supersingular reduction prime. Using a similar idea, we also prove the algebraic functional equations for \pm -Selmer groups defined by S. Kobayashi. (Received December 12, 2004)