

**Meeting:** 1002, Pittsburgh, Pennsylvania, SS 14A, Special Session on Modularity of Galois Representations and Serre's Conjecture

1002-11-36            **William A Stein\*** ([was@math.harvard.edu](mailto:was@math.harvard.edu)), Department of Mathematics, Harvard University, Science Center 325, One Oxford Street, Cambridge, MA 02138. *The Birch and Swinnerton-Dyer Conjecture, Tamagawa Numbers, and Level Lowering*. Preliminary report.

Suppose  $E$  is an elliptic curve defined over  $\mathbf{Q}$ . If a prime  $\ell$  divides a Tamagawa number  $c_p$ , then the Birch and Swinnerton-Dyer conjecture predicts that  $\ell$  should divide the ratio  $L(E, 1)/\Omega_E$ . In this talk I will sketch an approach to proving this statement under certain hypothesis that uses level optimization results that Ribet, Diamond, and Taylor developed to prove results towards Serre's conjectures. (There is an alternative way to prove the above statement using Kato's work, which I will not discuss.) (Received July 18, 2004)