

AROUND THE PARITY CONJECTURE

TIM DOKCHITSER

For an abelian variety A over a number field K , there are various ‘modulo 2’ versions of the Birch-Swinnerton-Dyer Conjecture, each sometimes called the Parity Conjecture. One asserts that the algebraic rank of A/K has the same parity as the analytic rank (as given by the root number). Another one is the same statement for the p^∞ -Selmer rank for some prime p . I will explain the proof of the second conjecture for all elliptic curves E/\mathbb{Q} and all p (this completes earlier work by Greenberg, Guo, Monsky, Nekovar and Kim). I will also explain how to approach the first conjecture for abelian varieties over any K (if one assumes finiteness of III), and say something about the second conjecture in p -adic Lie towers. This is joint work with Vladimir Dokchitser.