

LOCAL SZPIRO'S CONJECTURE

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For any elliptic curve E over \mathbf{Q} , let $N(E)$ and $\Delta(E)$ denote it's conductor and minimal discriminant. Szpiro's conjecture states that for any $\epsilon > 0$, there exists a constant C such that

$$|\Delta(E)| < C(N(E))^{6+\epsilon}$$

for any elliptic curve E . This conjecture, if true, will have applications to many Diophantine equations. One immediate application for this conjecture is that if $N(E) = Mp$ with p considerably larger than M , then $v_p(\Delta(E)) \leq 6$. In this talk I will study this problem, and some of it's applications to Diophantine equations.