1052-11-83 **Guillermo Mantilla*** (mantilla@math.wisc.edu), Madison, WI. *On the Mordell-Weil rank of Jacobians of principal modular curves of prime power level.* Preliminary report.

In this talk we give a bound for the growth of Mordell-Weil ranks in towers of Jacobians of modular curves. In more detail, we will show the following result.

Let $p > 2$ be a prime, and let J_n be the Jacobian of the principal modular curve $X(p^{n+1})$. Let F be a number field with μ-invariant μ, and such that $J_0[p] \subseteq F$. We show that there exists a constant C, depending on F and p, such that

$$\text{rank} J_n(F) \leq (\frac{2p}{p^2-1})[F:\mathbb{Q}] \dim J_n + C' p^{2n} + 2\mu n$$

for all n.

The proof of the theorem generalizes a technique used in an unpublished result of J. Ellenberg on Fermat curves. (Received August 20, 2009)