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Mordell-Weil ranks in towers of modular Jacobians.

In this talk we describe a technique to bound the growth of Mordell-Weil ranks in towers of Jacobians of modular curves. In more detail, we will show our progress towards 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 such that $J_0[p] \subseteq F$. Then,

$$\text{rank} J_n(F) \leq 2[F : \mathbb{Q}] \dim J_n + o(\dim J_n)$$

for all n.