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**Ken McMurdy\*** (mcmurdy@rose-hulman.edu), Rose-Hulman Institute of Technology, 5500  
Wabash Ave., Terre Haute, IN 47803. *Stable Reduction of  $X_0(p^n)$ , a Progress Report.*

When  $p^n$  is sufficiently large, the modular curve  $X_0(p^n)$  can not have a model with good reduction over any complete subfield of  $\mathbb{C}_p$ . Determining a stable model, one notion of the “next best thing,” has been the subject of an ongoing investigation by the speaker and Robert Coleman. In particular, the cases of  $n \leq 3$  are now known and  $n = 4$  is conjecturally understood. The purpose of this talk will be to discuss elements of our construction which generalize to all levels and begin to form the framework for a general theory. (Received September 24, 2006)