962-03-922 **Jessica M Young*** (jessica@math.mit.edu), Department of Mathematics Rm 2-488, Massachusetts Institute of Technology, 77 Massachusetts Ave, Cambridge, MA 02139. *Decidable Prime Models.* Preliminary report.

A set $S$ of types over a theory $T$ is **strongly free** if for all subsets $X \subset S$, there is a countable model of $T$ which realizes $X$ and omits $S \backslash X$. Throughout, all theories are assumed complete and consistent. **Theorem** *If all strongly free sets of types over a computable theory $T$ are finite, then $T$ has a decidable prime model.* A classical result in model theory is that any theory with less than $2^{\aleph_0}$ many countable models must have a prime model. Our theorem gives an effective extension of this result: **Corollary** *If a countable theory $T$ has less than $2^{\aleph_0}$ many countable models, then there is a prime model of $T$ computable in $T$.* The Barwise Compactness theorem lies at the heart of the proof, giving rise to a result in classical recursion theory with a higher recursion theoretic proof. (Received September 30, 2000)