1108-05-472 **Patrick Bennett*** (patrickb@cs.toronto.edu) and **Mike Molloy**. *Resolution Space in Random 3-SAT.*

Resolution is a rule of inference for boolean formulas in conjunctive normal form. Specifically, if the formula contains the clauses $(A \vee x)$ and $(B \vee \bar{x})$ then any satisfying assignment must also satisfy the clause $(A \vee B)$. It turns out that a formula is unsatisfiable if and only if it can be used to derive the empty clause using repeated applications of the resolution rule. Such a derivation is called a resolution refutation for the formula. The total resolution space of an unsatisfiable formula is the least amount of memory required to verify any resolution refutation for the formula. We show that with high probability the resolution space of random instances of 3-SAT (chosen from a distribution where we know the formula is unsatifiable w.h.p.), the total resolution space is quadratic, which is worst possible up to a constant. Our result fills in the gap left by Bonacina, Galesi, and Thapen, who proved the same result for k-SAT when $k \geq 4$. (Received January 19, 2015)