1077-05-483 **Eric Schmutz** (schmutze@drexel.edu) and **Le Yu*** (ly32@drexel.edu), Korman Center 209, Drexel University, 3141 Chestnut Street, Philadelphia, PA 19104. *Automorphisms of Random Trees.* Preliminary report.

For each labelled tree T, let $|Aut(T)|$ be the number of automorphisms T has. Let $\mu_n = \frac{1}{n^{n-2}} \sum_T |Aut(T)|$ be the expected order of the automorphism group for uniform random labelled trees on $[n]$. It is well known that there is a constant $\rho_1 > 1$ such that, for all sufficiently large n,

$$\rho_1^{n(1-\epsilon)} < \mu_n < \rho_1^{n(1+\epsilon)}.$$

We have proved that there is a *strictly smaller* constant ρ_0 such that, with asymptotic probability one,

$$\rho_0^{n(1-\epsilon)} < |Aut(T)| < \rho_0^{n(1+\epsilon)}.$$

Thus most trees have an automorphism group that is *much* smaller than the average order: if $\mathbb{P}_n$ is the uniform probability measure in the set of all n^{n-2} labelled trees on $[n]$, then there is a constant $\delta > 0$ such that

$$\mathbb{P}_n\left(|Aut(T)| > \frac{\mu_n}{(1+\delta)^n}\right) = o(1).$$

An asymptotic formula for $\mathbb{E}(\log |Aut(T)|)$ is proved, and we conjecture that $|Aut(T)|$ is asymptotically lognormal. (Received September 04, 2011)