1129-60-202 **Moumanti Podder*** (mp3460@nyu.edu), 226-230 East 12th Street, Apartment 11B, New York, NY 10012. *The Strange Logic of Galton-Watson Trees.*

This talk will focus on the rooted Galton-Watson (GW) tree with Poisson(λ) offspring distribution, though most of the results can be extended to very general distributions. I shall discuss first the analysis of first order (FO) properties: these capture the local structures inside a tree. I give a complete description of the probabilities $P_\lambda[A]$ of all possible FO sentences A conditioned on the survival of the GW tree. There are, up to tautology, only a finite number of FO sentences of given quantifier depth k. For an arbitrary k, I introduce a natural distributional recursion Ψ_k, such that the probabilities of these sentences form a fixed point of Ψ_k. I further show that Ψ_k is a contraction, and that its fixed point is unique and analytic in λ.

Time permitting, I shall gloss over some recently finished results concerning existential monadic second order (EMSO) properties of trees. I define the notion of *interpretation* of fixed points derived from *tree automata*, and discuss a bit about *rogue fixed points*, the ones that do not admit any interpretation. I illustrate these via a nice example of an EMSO. I shall end with speculations and conjectures that hopefully the audience will find fascinating. (Received March 15, 2017)