Mathematics, Statistics, and Computer Science   **@ UIC**

Logic Seminar

The asymptotic couple of the field of logarithmic transseries

Allen Gehret (UIUC)

Abstract: The differential-valued field $\mathbb{T}_{\log}$ of logarithmic transseries is conjectured to have good model theoretic properties. As a partial result in this direction, and as a confidence building measure we prove that at least its \emph{asymptotic couple} has a good model theory. The value group $\Gamma_{\log}$ of $\mathbb{T}_{\log}$ can be given the additional structure of a map $\psi : \Gamma \to \Gamma$ which is induced by the derivation on $\mathbb{T}_{\log}$. The structure $(\Gamma_{\log}, \psi)$ is the asymptotic couple of the field of logarithmic transseries (in the sense of Rosenlicht). In this talk we will discuss the good model-theoretic properties of $(\Gamma_{\log}, \psi)$, including a quantifier-elimination result in an appropriate first-order language, definable functions on a certain discrete set, a stable embedding result, and NIP (the Non-Independence Property). All results in this talk (besides NIP) are in http://arxiv.org/abs/1405.1012.

Tuesday, February 3 at 4:00 PM in SEO 427