## Matthias Aschenbrenner: The algebra and model theory of transseries.

The concept of a ÒtransseriesÓ is a natural extension of that of a Laurent series, allowing for exponential and logarithmic terms. Transseries were introduced in the 1980s by the analyst Écalle and also, independently, by the logicians Dahn and Göring. The germs of many naturally occurring real-valued functions of one variable have asymptotic expansions which are transseries. Since the late 1990s, van den Dries, van der Hoeven, and myself, have pursued a program to understand the algebraic and model-theoretic aspects of this intricate but fascinating mathematical object. A differential analogue of ÒhenselianityÓ is central to this program. Last year we were able to make a significant step forward, and established a quantifier elimination theorem for the differential field of transseries in a natural language. My goal for this talk is to introduce transseries without prior knowledge of the subject, and to explain our recent work.