Universität Konstanz

Fachbereich
Mathematik und Statistik
Schwerpunkt
Reelle Geometrie und Algebra

Einladung

Im Oberseminar *Modelltheorie* hält

Sebastian Krapp
(Universität Konstanz)

am **Montag, 20.06.2016**, einen Vortrag zum Thema:

On the Decidability of the Real Exponential Field

Der Vortrag findet um **15:15 Uhr** in **F420** statt.
Alle Interessenten sind herzlich eingeladen.

Abstract: The real exponential field $\mathcal{R}_{\exp} = (\mathbb{R}, +, \cdot, 0, 1, <, \exp)$ is the structure of the real field equipped with the unary function of standard exponentiation $\exp(x) = e^x$. Tarski posed the question whether the theory of $\mathcal{R}_{\exp}$ is decidable, i.e. whether there exists an effective procedure determining whether a given sentence in the language of $\mathcal{R}_{\exp}$ is true in $\mathcal{R}_{\exp}$. Macintyre and Wilkie showed in [1] that under the assumption of Schanuel's Conjecture, a strong conjecture in transcendental number theory, the answer is positive.

In my talk I will firstly present the main steps of Macintyre and Wilkie's proof which are based on the model completeness result of $\mathcal{R}_{\exp}$ in [2] and independent of Schanuel's Conjecture, and secondly explain in more detail how Schanuel's Conjecture eventually resolves the decidability question. No specific knowledge outside basic model theory will be required to follow the talk.

[1] A. Macintyre and A. Wilkie, On the decidability of the real exponential field, in: 'Kreiseliana: about and around Georg Kreisel' (Piergiorgio Odifreddi), A. K. Peters, Wellesley, Mass., 1996, pp. 441–467.
[2] A. Wilkie, Model completeness results for expansions of the ordered Field of real numbers by restricted Pfaffian functions and the exponential function, Journal of the American Mathematical Society 9 (1996), no. 4, 1051–1094.

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