

Hilbert's 10 tes Problem klassisch

Michael Pfender (TU Berlin)

MON/AE01 17:30–17:50

We rely here on Gödel's 2nd *Incompleteness-Theorem* for an attempt to a *positive* solution of Hilbert's 10th problem: Terminating (algorithmic) decision on solvability of a given diophantine equation, here within the framework of an (arbitrary) classically Quantified Arithmetical Theory. A second application of this Gödel's Theorem—within the *Correctness-discussion* for this algorithmic “decision”—deduces ω -*inconsistency* of such classically Quantified Arithmetical Theories, in particular of *Principia Mathematica und verwandten Systemen*.

- [1] K. GÖDEL: Über formal unentscheidbare Sätze der Principia Mathematica und verwandter Systeme I. *Monatsh. der Mathematik und Physik* **38** (1931), 173-198.
- [2] R. L. GOODSTEIN: *Development of Mathematical Logic*, ch. 7: Free-Variable Arithmetics. Logos Press 1971.
- [3] D. HILBERT: Mathematische Probleme. Vortrag Paris 1900. Gesammelte Abhandlungen, Springer 1970.
- [4] Y. V. MATIYASEVICH: *Hilbert's Tenth Problem*. The MIT Press 1993.
- [5] C. SMORYNSKI: The Incompleteness Theorems. Part D. 1 in BARWISE ED.: *Handbook of Mathematical Logic*. North Holland 1977.