Ústav informatiky
Akademie věd České republiky

Pod Vodárenskou věží 2, 182 07 Praha 8

ÚI AV ČR ve spolupráci s Odbornou skupinou aplikované matematické logiky České společnosti pro kybernetiku a informatiku

pořádá

v seminární místnosti ÚI AV ČR - místnost č. 318
(stanice metra C Ládví)

Seminář aplikované matematické logiky

který se schází **ve středu ve 14.00 hod.**

Program na červen 2015:

3. 6. 2015 - *Zach Weber*
Computation in non-classical foundations?

The Church-Turing Thesis (CTT) is one of the great success stories in twentieth century analytic philosophy and mathematical logic. It is widely regarded as true because convergence theorems provide evidence that there is only one unique formalization of the notion of computation. By contrast, it is now the twenty-first century; there are many different formal logics, and different corresponding foundational frameworks for mathematics; some proposed as serious rivals to classical logic. With this plurality of logics in view, we want to ask: "Which frameworks prove that all formal analyses of computation are equivalent?"

But this apparently simple question points to a dificult challenge: the meanings of basic mathematical terms (like 'set', 'function', and 'number') are not stable across frameworks. Proponents of non-classicality have often responded to this challenge by defaulting to orthodox, classical foundations, but this is bad methodology if we want to be faithful to the intent of non-classical frameworks. So our main question is: "How can we fairly test, without bias in favor of one logic over another, which non-classical logics confirm the CTT?"

I will argue for some minimal conditions of agreement that must be met if two frameworks are to be compared. Then I will sketch some preliminary results from one non-classical framework, paraconsistent mathematics, with indications of how it fares. This exercise sheds light on the nature of non-classical frameworks and the notion computation alike.

10. 6. 2015 - *Igor Sedlár*
Substructural Epistemic Logics

The talk outlines a recent application of substructural logics in knowledge representation. We introduce a family of substructural epistemic logics designed to represent belief supported by evidence. The logics combine normal modal epistemic logics (implicit belief) with distributive substructural logics (available evidence). Pieces of evidence are represented by points in substructural models and availability of evidence is modelled by a function on the underlying point set. The main technical result discussed is a general completeness theorem for a family of substructural epistemic logics. Axiomatizations are provided by means of two-sorted Hilbert-style calculi. It is also shown that the framework presents a natural solution to the problem of logical omniscience.