

# 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 Ládvi)

### Seminář aplikované matematické logiky

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

*Program na listopad 2014:*

12. 11. 2014 - *Adam Přenosil*

#### **Reductio ad contradictionem an algebraic perspective**

When reasoning from potentially inconsistent premises, it is useful to have a logic which does not collapse into triviality in the face of contradiction. Probably the best known such logic is the four-valued logic introduced by Belnap and Dunn, which is essentially the equational logic of de Morgan algebras. This logic take consistent and inconsistent theories to be on equal footing. However, perhaps this is a step too far: we want to be able to use contradictory premises in our reasoning while still acknowledging their inconsistency. In order to talk about inconsistency in the object language, we expand the Belnap-Dunn logic by a unary connective representing reductio ad contradictionem. We define the corresponding variety of algebras, which we call reductio algebras, and establish that it is locally finite and has equationally definable principal congruences. We then use finite duality theory to describe the (uncountable) lattice of varieties of reductio algebras in simple graph-theoretic terms.

19. 11. 2014 - *Milan Daniel, Jianbing Ma*

#### **Logics with (semilinear) implication revisited**

Preliminaries of belief functions and basic ideas and properties of plausibility and pignistic conflicts of belief functions will be recalled. These measures of conflict are based on two different probability transformations of belief functions, the normalised plausibility of singletons and Smets' pignistic probability.

The seminar will be focused on continuity property and relationship of these conflict measures to extension and refinement of a frame of discernment; on the results which were presented by Milan Daniel and Jianbing Ma at the conference SUM 2014.

A new continuous improvement of both the measures which is preserved by a frame extension will be introduced. A relationship of the new conflict measures to refinement of a frame of discernment will be also discussed. Finally a comparison between the new measures and two original measures as well as a comparison to Weiru Liu's degree of conflict will be presented.