Ciências ULisboa

SEMINÁRIO
LÓGICA MATEMÁTICA

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CMAFcIO

An introduction to conditionals and their proof theory

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ABSTRACT:

Conditional logics enrich the language of classical propositional logic with a two-places modal operator, the conditional, suitable to represent fine-grained notions of conditionality, such as counterfactual statements, non-monotonic inferences, and conditional belief assertions. Semantic studies of conditionals date back to the 1970s, with the seminal works of Stalnaker, D. K. Lewis and Chellas. Since then, various classes of models capturing conditionals have been developed and extensively studied. In contrast, the proof theory of conditional logics has been developed only in recent years, relying on the proof-theoretic techniques employed for modal logics. Specifically, to define analytic proof systems for modal logics, two main approaches have been developed: the labelled approach enriches the language of sequent calculus with semantic information, while the structured approach employs additional structural connectives in the calculus. To this latter approach belong, e.g., nested sequents and hypersequents.

After introducing conditional logics and their semantics, that I will define in terms of neighborhood models, I will present sequent calculi for conditional logics belonging both to the labelled and to the structured approach. Namely, I will present a labelled sequent calculus, modularly capturing a large family of conditional systems by internalising their semantics, and a nested-style sequent calculus, featuring a structural connective representing neighborhoods of the model. I will then compare the two calculi and their properties. This talk is based on joint work with: Bjoern Lellmann, Sara Negri, Nicola Olivetti and Gian Luca Pozzato.

This is a joint session with Centro de Filosofia das Ciências – CFCUL

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