Abstract:
Constructive provability logic is a structural proof theory for modal logic. It bears a superficial resemblance to the intuitionistic Kripke semantics for modal logic as presented by Alex Simpson, but it has different judgmental principles and admits only certain accessibility relations. As a result, it validates the fundamental axiom \( [[[[A \to A] \to [A]]] \) of Gödel-Löb provability logic, a modal logical that has not received much attention as an intuitionistic modal logic. We believe that constructive provability logic can be used to give a fully proof-theoretic justification for negation in a logic programming.

This is joint work with Bernardo Toninho and Frank Pfenning that will be presented at Intuitionistic Modal Logic and Applications in 2011.