Department of Mathematics
University of Notre Dame

LOGIC SEMINAR

Guest Speaker: Michael Rathjen
University of Leeds

Date: Tuesday, November 15, 2016
Time: 2:00 PM
Location: 125 Hayes-Healy Hall

Lecture Title:
Proof-theoretic reduction and long proofs

Abstract

The notions of conservativity, speed-up, interpretation and proof-theoretic reduction pertaining to pairs of theories (T, S) have occupied a central place in mathematical logic (and will be discussed in the talk). In proof theory there are many results where a system S is reduced to another system T, yielding that S is conservative over T with respect to Pi_2^0 or arithmetic theorems. A particularly subtle issue in proof theory is how infinitary proof theory with its use of infinite deductions gives rise to finitistic conservativity results, i.e., reductions governed by primitive recursive functions. Paying attention to these details can also reveal why there are specific (true) Σ_1^0 theorems that have short proofs in a system S but only extremely long proofs in a system T with a smaller proof-theoretic ordinal.