Logic Seminar

UNIVERSITY OF NOTRE DAME
Department of Mathematics

Speaker: Henry Towsner
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Thursday, October 25, 2012
2:00 PM
125 Hayes-Healy Hall

Title: Iterated Forcing and Counterexamples in Reverse Mathematics

Abstract:

One of the main concerns of reverse mathematics is classifying the relationships among theorems of the form "given an instance X of a specified problem, there is a solution Y". For instance, the principle ADS says that given any linear ordering of the natural numbers, there is either an infinite descending sequence or an infinite ascending sequence, while the principle CAC says that given any partial ordering there is either an infinite chain or an infinite antichain. A natural question in reverse mathematics is what implications hold between these principles. We show that ADS does not imply CAC (over the standard base theory RCA0) by using iterated forcing to simultaneously construct an instance X of CAC together with solutions to all instances of ADS computable from X (and all instance of ADS computable from those solutions, and so on) with the property that none of these solutions to instances of ADS computes a solution to X. (Joint work with Manny Lerman and Reed Solomon.)