

GRADUATE STUDENT SEMINAR

Guest Speaker: John Siratt
University of Notre Dame

Date: Monday, January 4, 2021

Time: 4:00 PM

Location: Zoom

Zoom URL: notredame.zoom.us/j/95815357423

Lecture Title:

The Strength of Buchi's Decidability Theorem

Abstract

Although second order logic is not decidable in general, there are interesting theories in fragments of second order logic that are decidable. Buchi's Decidability Theorem for the monadic second order theory of the natural numbers with the less-than-or-equal-to relation is one such decidability result. Recent work by Kolodziejczyk, Michalewski, Pradic, and Skrzypczak, has shown that the logical strength of Buchi decidability over RCA_0 is equivalent to induction over Σ_2 formulas. We will present some needed background including some automata theory and reverse mathematics, then sketch a modern proof of Buchi decidability. This proof can be easily modified to establish one direction of the strength result. Finally, we will give a short overview of the authors' proof showing the other direction.