

Logic Seminar

Borel determinacy, level by level: monotone induction and reflection principle

Sherwood Hachtman (UCLA)

Abstract: Borel determinacy, though a theorem of ordinary analysis, cannot be proven without some appeal to the higher infinities of set theory: By the dual results of Harvey Friedman and Donald Martin, the strength of $\Sigma^0_{1+\alpha+3}$ -determinacy is roughly that of ZF with Power set restricted to $\alpha + 1$ iterations on ω .

Refining these results, we eliminate the "roughly", isolating a family of novel reflection principles whose strengths correspond exactly to that of determinacy for these levels. We will describe this work, also mentioning connections with higher-order reverse mathematics, and stronger determinacy principles having the strength of measurable cardinals.

We also discuss some recent work building on that of Philip Welch, giving a new, natural characterization of the strength of Σ^0_3 -determinacy in terms of monotone operators.

Tuesday, April 21 at 4:00 PM in SEO 427