

LOGIC SEMINAR

Guest Speaker: Todd Eisworth
Ohio University

Date: Tuesday, April 30, 2024

Time: 2:00 PM

Location: 125 Hayes-Healy Bldg

Zoom URL: NA



Lecture Title:

Ramsey Cardinals and Ramsey Theory

Abstract

We will survey some results concerning partitions of pairs of real numbers, grounded in Sierpinski's old result that we may color the set of pairs of real numbers with two colors in such a way that for any uncountable set X of reals, both colors appear when we restrict ourselves to pairs drawn from X . The question of whether the "two" appearing in this result is sharp has motivated a great deal of research, and we will talk through some of what is known and what has been accomplished recently. The end point will be some recent work of the speaker where we show that if there is a Ramsey cardinal, then whenever we partition an uncountable set of reals into finitely many colors, we can find a set homeomorphic to the rationals on which the coloring takes on at most two values. Raghavan and Todorćević earlier established that this conclusion (which affirms an old conjecture of Galvin) follows from the existence of a Woodin cardinal. Our proof shows that in the presence of a Ramsey cardinal, every normal ideal on \mathbb{R} possesses a very weak form of "precipitousness", a standard notion in the theory of large cardinals.