

Speaker: John Clemens

Title: Complexity of the isomorphism problem for subshifts

Abstract: The theory of Borel reducibility of definable equivalence relations can be used to gauge the complexity of classification problems, for instance, by determining how complicated a set of complete invariants must be. I will give a brief introduction to this theory, and use it to analyze the relation of isomorphism among one-dimensional subshifts. We can show that the isomorphism relation is a universal countable Borel equivalence relation, that is, this relation is of maximal complexity among equivalence relations whose graph is Borel and whose equivalence classes are all countable. As a corollary, we see that the isomorphism of two-dimensional or higher-dimensional subshifts has the same complexity (from the standpoint of Borel reducibility) as that for one-dimensional subshifts, in contrast to other results which suggest that the complexity increases with dimension.