Speaker: John Clemens

Title: Borel partition properties for equivalence relations

Abstract: One may consider definable analogues of partition relations in Ramsey theory, where we consider Borel partitions of tuples from a quotient spaces X/E, for X a Polish space and E a Borel equivalence relation on X. The size of a homogeneous set for a partition may then be measured in terms of Borel reducibility of equivalence relations. In this talk I will discuss this viewpoint, and focus on partition relations related to the equivalence relation F_2 of equality of countable sets of reals. A result of Kanovei-Sabok-Zapletal may be interpreted in this context to give a version of the Pigeonhole Principle: For any Borel partition of F_2-classes, there is a set of the same definable cardinality as F_2 which is either homogeneous or discrete for the partition. On the other hand, I will show that a natural strengthening of this result, a definable version of weak compactness, fails: There is a Borel 2-coloring of pairs of F_2 classes for which there is no homogeneous set with definable cardinality of F_2.