Speaker: Christopher Porter

Title: Rank and Randomness

Abstract: A straightforward result in algorithmic randomness is that no Martin-Löf random sequence is a member of a countable Π^0_1 class (and not even a Π^0_1class of Lebesgue measure zero). However, it has been shown by Bienvenu and Porter that there is a computable measure μ with the property that there is a non-computable sequence that is Martin-Löf random with respect to μ and is contained in a countable Π^0_1 class; in fact, this particular sequence has Cantor-Bendixson rank 1. This raises a question: For each computable ordinal α, is there a sequence that is Martin-Löf random with respect to some computable measure and has Cantor-Bendixson rank α? In this talk, I will show that not only is there an affirmative answer to this question, but also that such a sequence can be found in every Δ^0_2 degree that contains a Martin-Löf random sequence (with respect to the Lebesgue measure).   This is joint work with Rupert Hölzl.