



Speaker: Denis Hirschfeldt
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Tuesday, December 5, 2017

2:00 PM

125 Hayes-Healy Hall

Title: Computability Theory and Asymptotic Density

Abstract:

The notion of generic-case complexity was introduced by Kapovich, Myasnikov, Schupp, and Shpilrain to study problems with high worst-case complexity that are nevertheless easy to solve in most instances. They also introduced the notion of generic computability, which captures the idea of having a partial algorithm that halts for almost all inputs, and correctly computes a decision problem whenever it halts. Jockusch and Schupp began the general computability-theoretic investigation of generic computability and also defined the notion of coarse computability, which captures the idea of having a total algorithm that might make mistakes, but correctly decides the given problem for almost all inputs (although this notion had been studied earlier in Terwijn's dissertation). Two related notions, which allow for both failures to answer and mistakes, have been studied by Astor, Hirschfeldt, and Jockusch (although one of them had been considered in the 1970's by Meyer and by Lynch). All of these notions lead to notions of reducibility and associated degree structures. I will discuss some recent work on these notions, including connections with algorithmic randomness.