Date: September 8, 2020

Speaker: Douglas Cenzer

Title: Randomness Extraction from a Computability-Theoretic Perspective

Abstract: We study a notion of the extraction rate of Turing functionals that translate between notions of randomness with respect to different underlying probability measures. We will analyze several classes of extraction procedures: a first that generalizes von Neumann's trick for extracting unbiased randomness from the tosses of a biased coin, a second based on work of generating biased randomness from unbiased randomness by Knuth and Yao, and a third independently developed by Levin and Kautz that generalizes the data compression technique of arithmetic coding. For each of the above classes of extraction procedures, we will identify a level of algorithmic randomness for an input that guarantees that the optimum rate is achieved. This is a joint work with Christopher P. Porter.