

Title: Algorithmic Randomness and Turing Reducibility

Abstract: We will introduce some of the basic ideas of algorithmic randomness and define two central concepts: the set of Martin-Löf random sequences, and the set of K-trivial sequences (the K-trivial sequences are far from random). We will investigate the relationship between algorithmic randomness and Turing reducibility. A theorem of Kučera and Gács establishes that every sequence is Turing reducible to a Martin-Löf random sequence. However, this theorem makes use of random sequences which are complete, i.e. they can compute zero-jump. One significant open question in this area is whether or not all K-trivial sequences can be computed by an incomplete Martin-Löf random sequence. We will discuss this, and other open problems.