1123-03-239 **Christopher P Porter*** (cp@cpporter.com), Drake University, Department of Math/CS, 2505 University Ave, Des Moines, IA 50310, and **Cameron Fraize** (cameron.fraize@ufl.edu), Department of Mathematics, University of Florida, 1400 Stadium Rd, Gainesville, FL 32611.
Kolmogorov complexity and generalized length functions.

Kolmogorov complexity measures the algorithmic complexity of a finite binary string σ in terms of the length of the shortest description σ^* of σ. Traditionally, the length of σ^* is taken to measure the amount of information contained in σ. However, we may also view the length of σ^* as a measure of the cost of producing σ, which permits one to generalize the notion of length, wherein the cost of producing a 0 or a 1 can vary in some prescribed manner.

In this talk, I will discuss this generalization of length based on the above information cost interpretation and a modification of the definition of Kolmogorov complexity in terms of generalized length functions. I will focus on a specific class of generalized length functions (called k-length functions) that are intimately related to a subcollection of the Bernoulli p-measures, namely those corresponding to the unique computable real $p \in (0, 1)$ such that $p^k = 1 - p$ for $k \geq 1$. Lastly, I will present a generalization of the classic Levin-Schnorr theorem that involves k-length functions and subsequent results that involve effective dimension and entropy. (Received August 27, 2016)