1035-03-266 **Jan Reimann***, University of California Berkeley, Department of Mathematics, 705 Evans Hall, Berkeley, CA 94707. *Measures and their random reals.*

The duality between measures and the sets they "charge" is a central theme in modern analysis. An effective analogue of this question is: Given a real x, does there exist a (probability) measure relative to which x is effectively random (so that x is not an atom of the measure)? And if such a measure exists, can we ensure that it has certain properties (non-atomic, of a certain minimum capacity, etc)? While every non-computable real is random with respect to some measure, there exists a nested sequence of countable Π^1_1 sets of reals that are not n-random with respect to any continuous measure. This sequence exhibits a number of interesting properties. For instance, the proof that all of the sets are countable requires the existence of infinitely many iterates of the power set of ω, similar to Borel determinacy. Furthermore, there does not seem to be a natural notion of rank for such reals.

I will first survey the basic results on continuous randomness, before discussing more recent results on continuous 1-randomness. The techniques used in the proofs are drawn from various areas of logic and analysis, such as Turing degrees, Π^1_0 classes, determinacy, fine structure, or Hausdorff measures. (Received September 12, 2007)