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**Wesley Crain Calvert\*** ([wesley.calvert@murraystate.edu](mailto:wesley.calvert@murraystate.edu)), Department of Mathematics & Statistics, Faculty Hall 6C, Murray State University, Murray, KY 42071. *Randomized Computation and Continuous First-order Logic*.

Continuous first-order logic is used to apply model-theoretic analysis to analytic structures (e.g. Hilbert spaces, Banach spaces, probability spaces, etc.). Classical computable model theory is used to examine the algorithmic structure of mathematical objects that can be described in classical first-order logic. The present talk will explain how probabilistic computation (sometimes called randomized computation) can play an analogous role for structures described in continuous first-order logic.

The main result of this talk is an effective completeness theorem, showing that every decidable continuous first-order theory has a probabilistically decidable model. I will also give examples of the application of this framework to various classes of structures, and to some problems of computational complexity theory. (Received August 06, 2008)