

R. Clifton Bailey Statistics Seminar Series

Limiting distributions of Polya and Ehrenfest Processes

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11:00 A.M. - 12:00 Noon

Abstract: Polya urn models have immense applications in many areas of Science and Economics. In this talk, we will investigate the Polya process, which underlies the growth of an urn of white and blue balls growing in real time. A partial differential equation governs the evolution of the process. For urns with (forward or backward) diagonal ball addition matrix the partial differential equation is amenable to asymptotic solution.

We will also introduce a tenable class of urns that generalize the classical Ehrenfest model, and analyze the Ehrenfest process obtained by embedding the discrete evolution in real time. We show that lurking under the Ehrenfest process is a limiting binomial distribution, whose number of trials is an integer invariant property of the process.