

## Recent Developments in Rare-Event Simulation

**Peter W. Glynn**, Stanford University, Stanford, USA

Computing rare-event probabilities is a problem that is of interest in many applied settings: loss in communications networks, bankruptcy in insurance risk, long customer fulfillment times in a supply chain, valuing an out-of-the-money option, assessing system unavailability, etc. In this talk, we will describe recent progress in developing efficient algorithms for computing such rare-event probabilities. Importance sampling plays a key role, specifically the use of changes-of-measure that are "state-dependent" or "dynamic". Appropriately designed Lyapunov functions are then needed to bound the variances that arise in the analysis of such algorithms. In fact, the Lyapunov bound itself can play a role in the design of the algorithm. This talk describes joint work with Jose Blanchet that is closely related to the Isaacs equation ideas introduced by Dupuis and Wang.