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## Numerical simulations of stochastic inflation using importance sampling

*Tuesday, 27 June 2023 14:30 (20 minutes)*

Primordial black holes are expected to form from large, but rare, cosmological fluctuations in the tail of the probability distribution arising from inflation. I will present how importance sampling can be used to efficiently investigate the far, numerically expensive, probability tail of these fluctuations, finding non-perturbative deviations from Gaussianity. This is done by solving the first-passage time problem in the Langevin processes to find the distribution of the local duration of inflation in  $e$ -folds. By the stochastic- $\delta N$  formalism, these are related to the curvature perturbation at the end of inflation. What previously would take supercomputers weeks, or in principle even years, can be done in hours with just a single CPU using this approach.

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**Session Classification:** Selected Talks