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Exact-Approximate Collider Likelihoods

Thursday 27 February 2025 09:20 (15 minutes)

Monte Carlo simulations to interpret searches for new physics result in noisy approximate estimators of selection efficiencies and likelihoods. In this talk, I present an exact-approximate MCMC method that returns unbiased exact inferences despite the underlying noisy simulation. I will introduce a Poisson likelihood unbiased estimator and show its behaviour in the context of a search for neutralinos and charginos at the LHC. I will show that the resulting inferences are robust with respect to the number of generated events so that that exact approximate inference can be obtained without significant additional computational cost.

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