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## Likelihood-free Forward Modeling for Cluster Weak Lensing and Cosmology

*Friday, December 1, 2023 3:15 PM (15 minutes)*

Likelihood-free inference provides a rigorous way to preform Bayesian analysis using forward simulations only. It allows us to account for complex physical processes and observational effects in forward simulations. In this work, we use Density-Estimation Likelihood-Free Inference (DELFI) to perform a likelihood-free forward modelling for Bayesian cosmological inference, which uses the redshift evolution of the cluster abundance together with weak-lensing mass calibration. The analysis framework developed in this study will be powerful for cosmological inference in relation to ongoing cluster cosmology programs, such as the XMM-XXL survey and the eROSITA all-sky survey, combined with wide-field weak-lensing surveys.

In this talk, I will first present the convergent solutions for the posterior distribution which employ the synthetic cluster catalogue generated from our forward model, and then I will show some preliminary results by applying this method to the HSC data.

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