Contribution ID: **46** Type: **not specified**

Bayesian inference and predictions in the few-nucleon sector

Wednesday 15 June 2022 13:30 (20 minutes)

Effective field theories (EFTs) of the strong nuclear interaction is imbued with uncertainty stemming from, e.g., experimental errors and truncation of the EFT expansion. Theoretical predictions of nuclear observables should thus be considered—and presented—as probability density functions (PDFs) rather than scalar values. Working in a Bayesian framework, we have inferred PDFs for the EFT model parameters from observables in the few-nucleon sector by combining efficient computational methods with advanced sampling techniques and prior knowledge. This enables us to sample the PDFs for predictions of nuclear observables. We also learn that the predictions are precise enough to pick up the small isospin dependency of the nucleon-nucleon interaction. The talk will also cover ongoing work to condition the inference on data in heavier-mass nuclei using highly efficient and accurate emulators.

Author: SVENSSON, Isak

Co-authors: EKSTRÖM, Andreas; FORSSÉN, Christian (Chalmers University of Technology); WESOLOWSKI, Sarah (Ohio State University); Prof. FURNSTAHL, Richard (Ohio State University); PHILLIPS, Daniel (Ohio University); Dr MELENDEZ, Jordan (Ohio State University)

Presenter: SVENSSON, Isak

Session Classification: Sektionen för kärnfysik

Track Classification: Parallel session: kärnfysik