Uncertainty Quantification in Nuclear Physics

Topical Lecture Week with Prof. C. Forssén

Date: 11.10.2023 - 13.10.2023

Wednesday, October 11

09:00-10:30 Lecture 1: *Basics of Bayesian statistics and parameter estimation*
10:30-11:00 Coffee break
11:00-12:30 Lecture 2: *Assigning probabilities with limited knowledge*
12:30-12:45 Group photo
12:45-14:00 Lunch break
14:00-16:00 Exercise session 1: *Getting familiar with Bayes*
Day 1 Nuclear Physics Example: *How ab initio nuclear theory offers an inferential advantage*

Thursday, October 12

09:00 -10:30 Lecture 3: *Markov chains and MCMC sampling*
10:30 -11:00 Coffee break
11:00 -12:30 Lecture 4: *Advanced MCMC sampling*
12:30 -14:00 Lunch break
14:00-16:00 Exercise session 2: *Tools and tricks for MCMC sampling*
Day 2 Nuclear Physics Example: *Fast and rigorous constraints on three-nucleon forces from few-body observables*

18:00 Social dinner

Friday, October 13

09:00 -10:30 Lecture 5: *Bayes goes fast: Reduced-order modeling, emulators*
10:30 -11:00 Coffee break
11:00 -12:30 Lecture 6: *Bayes goes linear: History matching*
12:30 -14:00 Lunch break

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