



EP-IT Data science seminars

SPEAKER: Allen Caldwell

TITLE: **PHYSTAT Seminar: Accelerating Bayesian Computation: Parallelizing Markov Chain Monte Carlo**

DATE: 15 Jan 2020, 11:00

PLACE: 503/1-001 - Council Chamber

ABSTRACT

A full-fledged Bayesian computation requires evaluation of the posterior probability density in the complete parameter space. This can become very time consuming using commonly used algorithms such as Markov Chain Monte Carlos. We present ideas on the parallelization of the Markov Chain Monte Carlo approach via multi-proposal generation and via parameter space partitioning. For the former approach, recent developments in weighted sample generation are described and initial results presented. For massive parallelization via parameter space partitioning, the calculation of the marginal likelihood (evidence) is necessary and we solve this task with the Adaptive Harmonic Mean Integration (AHMI) algorithm. We describe the algorithm and it's mathematical properties, and report the results using it on multiple test cases.

Organised by: M. Girone, M. Elsing, L. Moneta, M. Pierini Event
co-organised with the [PHYSTAT
Committee](<https://espace.cern.ch/phystat>) **Coffee
will be served at 10h30**