APS Scientific Computation Seminar Series

Speaker: Brahim Mustapha
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Title: AI/ML Developments for the ATLAS Ion Linac Facility

Date: Monday, July 12, 2021

Time: 1:00 p.m. (Central Time)

Location: https://bluejeans.com/290056743/8303

Hosts: Mathew Cherukara and Nicholas Schwarz

Abstract:

ATLAS is a DOE/NP User Facility for the study of low-energy nuclear physics with heavy ions. It operates ~6000 hours per year. In addition to delivering any stable beam from proton to uranium, the facility also provides radioactive beams from the CARIBU source or via the in-flight radioactive ion separator, RAISOR. The facility uses 3 ion sources and services 6 target areas at energies from ~1-15 MeV/u. To accommodate the large number and variety of approved experiments, ATLAS reconfigures once or twice per week over 40 weeks of operation per year. The startup time varies from ~12 to 48 hours depending on the complexity of the tuning, which will increase with the upcoming Multi-User Upgrade to deliver beam to two experimental stations simultaneously. DOE/NP has recently approved a project to use AI/ML to support ATLAS operations. The project aim is to significantly reduce the accelerator tuning time and improve machine performance by developing and deploying artificial intelligence methods. These improvements will increase the scientific throughput of the facility and the quality of the data collected. Our recent developments and future plans will be presented and discussed.