Contribution ID: **19**   Type: **not specified**

OR19 - Development of an Automated Beam Loss Tuning Application in a High-Power Accelerator

Thursday, 14 September 2023 09:40 (20 minutes)

"Oak Ridge National Laboratory's Spallation Neutron Source (SNS), a high-power linear H- accelerator, is increasing its power capability from 1.4 to 2.8 MW and beam energy from 1 to 1.3 GeV through a long-term project called the Proton Power Upgrade (PPU). With an increase in power and energy, there is even more emphasis to reduce errant beam loss and residual activation in the accelerator tunnels. The Automated Beam Loss Tuning (ABLT) application aims to outperform the operators'by-hand tuning for changes from the up-grades and for typical day-to-day variances. The motivation began in Operations but extended to Accelerator Physics and has inspired the transition of physics applications from Java to Python. An in-house application called ScanEngine, developed as a coordinated effort between the Operations and Accelerator Physics groups, scans equipment settings such as magnet currents and RF phases while recording important parameters for future machine learning efforts. The data collected will be used by ABLT to inform a machine-learning model of the accelerator equipment and its relation to losses, and, with the proper protocols in place, the goal is for operators to run ABLT during neutron production.

*ORNL is managed by UT-Battelle, LLC, under contract DE-AC05- 00OR22725 for the U.S. Department of Energy."

Presenter: ELLIOTT, Carrie (SNS)

Session Classification: Involving Operators in Accelerator Physics and Commissioning