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Bayesian optimization calibration of ionization profile monitor at the AGS complex

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The ionization profile monitors (IPMs) are used to measure the transverse profiles of the beams accelerated at the Brookhaven National Laboratory (BNL) AGS. These devices use multi-channel plates (MCP) to collect electrons generated by ionization of the residual gas to get an image of the beam projection onto the two transverse planes. The gains of each of the 64 channels in the MCP can vary from channel to channel due to both initial fabrication variations and over time as the channel exposed to more signal degrade and become less sensitive. There are also systematic errors associated with varying delays in the digitization paths for different groups of channels. We describe a reinforcement learning approach to accounting for and calibrating these errors using historical data from the Brookhaven AGS IPMs.

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Footnotes

I have read and accept the Privacy Policy Statement

Yes

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