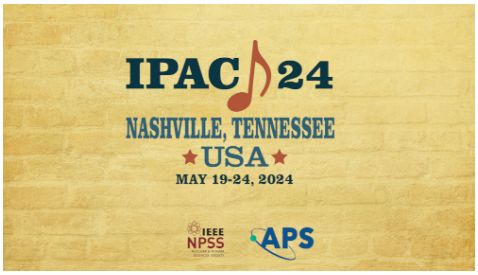

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Updates to Xopt for online accelerator optimization and control

Thursday, 23 May 2024 16:00 (2 hours)

The recent development of advanced black box optimization algorithms has promised order of magnitude improvements in optimization speed when solving accelerator physics problems. These algorithms have been implemented in the python package Xopt, which has been used to solve online and offline accelerator optimization problems at a wide number of facilities, including at SLAC, Argonne, BNL, DESY, ESRF, and others. In this work, we describe updates to the Xopt framework that expand its capabilities and improves optimization performance in solving online optimization problems. We also discuss how Xopt has been incorporated into the Badger graphical user interface that allows easy access to these advanced control algorithms in the accelerator control room. Finally, we describe how to integrate machine learning based surrogate models provided by the LUME-model package into online optimization via Xopt.

Footnotes

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