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A client for the ATLAS time machine

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The Argonne Tandem Linear Accelerating System (ATLAS) facility at Argonne National Laboratory is a National User Facility capable of delivering ion beams from hydrogen to uranium. The existing tune archiving system, which utilizes Corel's Paradox relational database management software, is responsible for retrieving and restoring machine parameters from previously optimized configurations. However, the Paradox platform suffers from outdated support, a proprietary programming language, and limited functionality, prompting the need for a modern replacement.
The client for the new system is a PySide6/QML based application. Its user interface has been designed with human usability and simplicity in mind, and feedback from ATLAS operators has played a key role in guiding the development process. In addition, it expands upon the functionality of the Paradox platform in a number of ways. For one, the process of searching for specific archived tunes has been greatly simplified through the use of a filtering tool that allows ATLAS operators to narrow down the list of experiments they need to search through based on specific parameter values, timestamps, and experiment numbers. When preloading the beamline, operators can now select tunes from multiple experiments in the archives, rather than just one as in the Paradox platform. Finally, the use of Python, a widely used and popular modern programming language, ensures long-term maintainability.

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Footnotes

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