

Abstract Submitted
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π Scope: python based scientific workbench with visualization tool for MDSplus data S. SHIRAIWA, PSFC, MIT — π Scope [1] is a python based scientific data analysis and visualization tool constructed on wxPython and Matplotlib. Although it is designed to be a generic tool, the primary motivation for developing the new software is 1) to provide an updated tool to browse MDSplus [2] data, with functionalities beyond dwscope and jScope, and 2) to provide a universal foundation to construct interface tools to perform computer simulation and modeling for Alcator C-Mod. It provides many features to visualize MDSplus data during tokamak experiments including overplotting different signals and discharges, various plot types (line, contour, image, etc.), in-panel data analysis using python scripts, and publication quality graphics generation. Additionally, the logic to produce multi-panel plots is designed to be backward compatible with dwscope, enabling smooth migration for dwscope users. π Scope uses multi-threading to reduce data transfer latency, and its object-oriented design makes it easy to modify and expand while the open source nature allows portability. A built-in tree data browser allows a user to approach the data structure both from a GUI and a script, enabling relatively complex data analysis workflow to be built quickly. As an example, an IDL-based interface to perform GENRAY/CQL3D simulations was ported on π Scope, thus allowing LHCD simulation to be run between-shot using C-Mod experimental profiles. This workflow is being used to generate a large database to develop a LHCD actuator model for the plasma control system. [1]<http://piscope.psfc.mit.edu> [2]<http://www.mdsplus.org>. Supported by USDoE award DE-FC02-99ER54512

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