

Research data management of laser-plasma science at HZDR

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The Draco laboratory at HZDR is a versatile, multi-arm and multi-target-area facility, consisting of several, independent subsystems. The lack of an overarching DAQ is balanced by interfaces of the subsystems and custom inter-linking agents. We present recent progress of implementing such software agents, connecting to the center's electronic lab documentation system. First, manual logging of shot parameters and observations is lifted from spreadsheet software to a flexible web-app, writing to a database (DB). The laser-internal logging is exported to a DB and internal software triggering is forwarded to experiments. That provides a connection between laser-internal indexing and experiment-based indexing (another DB) and enables near-online data processing. The latter comprises file path logging and validation according to the shot's acquisition settings for further analysis as well as basic on-shot analysis scripts, both enabling near-online visualization to better guide the course of experiments.

Likewise, parameters and results from simulations are logged to databases, enabling machine learning techniques and better computing resource management.

For a long-term, FAIR storage, the HELPMI project starts exploring the possibilities of openPMD and NeXus to ingest experimental data. That project shall serve as initiative for the global LPA community to find a data and metadata standard.

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