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HELPMI: towards a data standard for laser-plasma experiments

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The HELPMI project was a 2-year initiative to start the development of a F.A.I.R. data standard for laser-plasma experimental data. It was conducted by GSI, HI Jena and HZDR and subsidized by the Helmholtz Metadata Collaboration. The original aim was two-fold: building upon the extensible NeXus standard –being used for many experimental techniques in Photon and Neutron science –while keeping compatibility with openPMD, a meta-standard currently used for laser-plasma simulation data.
The partners have successfully extended the openPMD standard and its API to include arbitrary hierarchies (like NeXus), thereby allowing for full flexibility for either standard. They have created several showcase files, highlighting the potential of hdf5 containers along with a minimal Nexus standard compliance.
Regarding a metadata standardization, a collection of terms commonly used in laser-plasma experiments has been started. This can serve as a base for a future community-based "standard"list of terms. Furthermore, with contributions from HMC experts, this list was checked for existing definitions of terms in other scientific domains, since LPA is so far not part of e.g. the PaN community. After HELPMI, other projects like THRILL, Lasers4EU, DAPHNE4NFDI or UNLOCK will build upon the results and continue the work.

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