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A Python-based Software Stack for the LEGEND Experiment

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The LEGEND experiment is designed to search for the lepton-number-violating neutrinoless double beta decay of ^{76}Ge. The collaboration has selected Python as main programming language of its open source primary software stack, employed in decoding digitizer data and up to the most high-level analysis routines. Numba-based hardware acceleration of digital signal processing algorithms is provided through a package of potentially great interest for digitized data stream analyses. Moreover, the framework can be of general interest for any kind of tier-based analysis flow, with customizable chains of algorithms (kernels) defined through JSON configuration files. The LEGEND file format is HDF5-based, to ensure compliance with FAIR data principles. Modern development practices on packaging, style checking, CI/CD and documentation have been adopted. In this talk, I will present an overview of the LEGEND software stack and discuss its role within the PyHEP community.

Primary author: PERTOLDI, Luigi (Techincal University of Munich)

Presenter: PERTOLDI, Luigi (Techincal University of Munich)

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