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Python histogram developments

Histogramming for Python has been transformed by the Scikit-HEP family of libraries, starting with boost-histogram, a core library for high performance Pythonic histogram creation and manipulation based on the Boost C++ libraries. This was extended by Hist with plotting, analysis friendly shortcuts, and much more. And UHI is a specification that allows histogramming and plotting libraries, like uproot, mplhep, and histoprint, to interact without external dependencies by following a statically typed protocol. We will present introductions to these libraries, an overview of how new libraries can utilize and extend this ecosystem, and will report on the recent developments. Stacks of histograms, interpolation, ratio plots, pandas initialization, pie plots, and more have been added in the last year. Finally, we will briefly look at our progress in enabling Numba support, which allows interaction with Vector and Awkward to produce a fully JIT compiled event loop.

Significance

This will be the first time the Scikit-HEP histogramming ecosystem has been presented at ACAT. It has been presented at CHEP 2019, but was not submitted to vCHEP this year, so there are quite a few updates that have not been presented at a physics and computing conference before, including most of Hist and UHI. Demonstrating how other histogram production and consumption can follow a Python Protocol, enabling interaction with a growing ecosystem of libraries, will be very useful.

References

Links maintained at <https://iris-hep.org/projects/histogram.html>

Speaker time zone

Compatible with America

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