Contribution ID: **372**   Type: **Poster Presentation**

Streamlined data analysis in Python

Tuesday, 1 August 2023 19:51 (3 minutes)

Python is a particularly appealing language to carry out data analysis, owing in part to its user-friendly character as well as its access to well maintained and powerful libraries like NumPy and SciPy. Still, for the purpose of analyzing data in a lattice QCD context, some desirable functionality is missing from these libraries. Moreover, scripting languages tend to be slower than compiled ones. To help address these points we present the LatticeToolbox, a collection of Python modules to facilitate lattice QCD data analysis. Some highlighted features include general-purpose jackknife and bootstrap routines; modules for reading in and storing gauge configurations; a module to carry out hadron resonance gas model calculations; and convenience wrappers for SciPy integration, curve fitting, and splines. These features are sped up behind the scenes using Numba and concurrent.futures.

Topical area

Software Development and Machines

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Session Classification: Poster session