



Contribution ID: 6

Type: **not specified**

## Julia language for HEP analysis: faster time to insight and enabling more complex analysis

*Monday, 18 July 2022 20:40 (20 minutes)*

As the data collection grows larger and computational/statistical techniques become more complex, many physics analysis users are experiencing a “two-language problem”<sup>1</sup> without knowing it.

Julia and the ever-growing JuliaHEP2 ecosystem aim to provide end-users the ability to chew through a larger amount of data faster, by being a JIT language from the ground up. And also enable users to do custom machine learning and training because the pure-Julia ecosystem would allow automatic differentiation to propagate freely without foreign-library call barrier.

The poster presenter would talk about:

- Julia and why it's designed precisely for workloads like physics analysis
- How mono language enables effortless parallelization and automatic differentiation
- UnROOT.jl, BAT.jl, pyhf, FHist.jl, etc. and workflow for an end-user analysis in Julia
- Custom training and inference loop based on data before N-tupleized – enable deeper insight into raw event data, supported by Julia's speed and auto diff ability.

### In-person or Virtual?

In-person

**Primary authors:** LING, Jerry (Harvard University); STRUBE, Jan (PNNL); SCHULZ, Oliver (Max Planck Institute for Physics)

**Presenter:** LING, Jerry (Harvard University)

**Session Classification:** Poster Session