



Contribution ID: 6

Type: **Open talk - 30min**

Jet Finding in Julia

Thursday 9 November 2023 10:45 (35 minutes)

We describe the development and release of the new JetReconstruction.jl package, used for jet finding and clusterisation in HEP. This work grew out of a CHEP 2023 paper looking at language performance and ergonomics, where the Julia implementation impressed enough that it merited turning this into a production package.

We outline the process of tuning and optimisation for these algorithms, within the Julia ecosystem, how different approaches were tried that resulted in the final implementations that are now available. Some important lessons that we learned, in terms of optimal algorithms and their realisation in Julia, are highlighted.

Finally, we also describe the final interface design that is presented to users that allows internal development to continue, whilst providing a flexible and stable API.

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