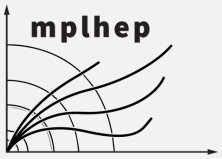
Columnar analysis @ PO&DAS 2023

***People**: Matteo B., Philip K., Marcel R., Daniel S.*

goal: familiarize new users with modern, columnar approach to analysis

NanoAOD flat *n*-tuples + ***Python*** HEP ecosystem + ***columnflow*** framework



ideally: whole workflow chain ("*n*-tuples to plots") as one ***PAG*** exercise*

- propose to have ***Higgs***-related analysis for this purpose *(ideas on next slide)*
- stripped-down version of a full analysis → focus on simple, well-defined analysis aspects of workflow

working with columnar data (*"array-at-a-time"*)

selection & categorization

histogramming

basic reconstruction

machine learning

plotting

*) technical aspects could also be realized as ***POG/Topical*** exercises (CAT), ***PAG*** exercise could build on that

Possible PAG exercises

***People**: Matteo B., Philip K., Marcel R., Daniel S.*

straightforward? ⟵ ⟶ *challenging?*

	H → 4ℓ	H → γγ	HH → bbWW/bbττ	BSM Higgs in m(tt̄)	tt̄Hbb
c/f-based analysis already exists	✗	✗	✓	✓	✗
"nice" observable	m(4ℓ) ✓	m(γγ) ✓	m(bb) ✓	m(tt̄) ✓	✗
machine learning	✗	✗	✓	✓	✓
expertise in our groups	✓	✗	✓	✓	✓

Possible PAG exercises

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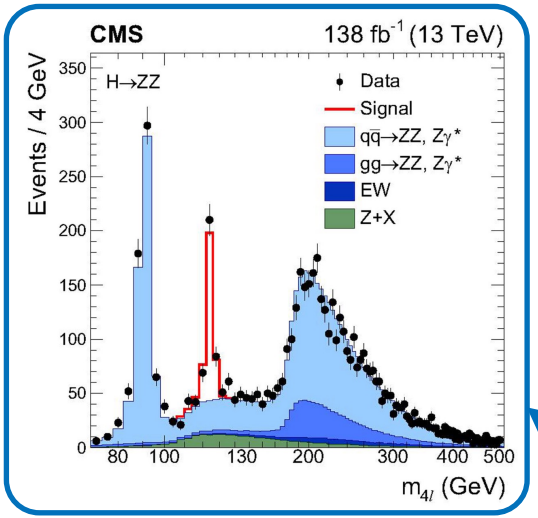

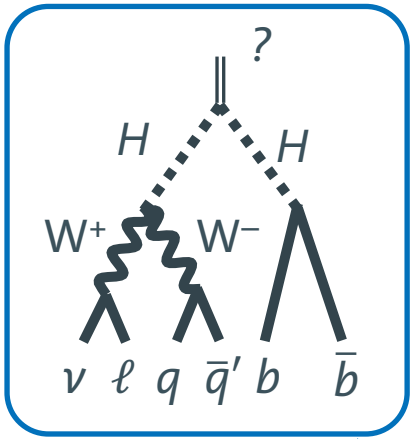

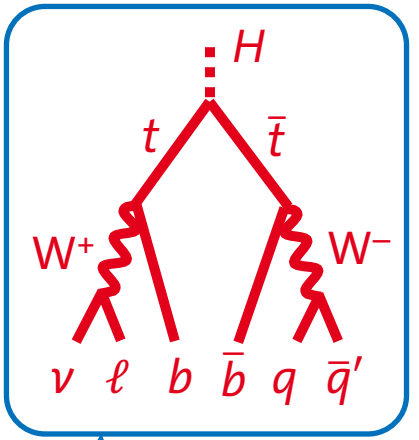

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expertise in our groups	✓	✗	✓	✓	✓