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# Translating Analyses Into Prototype Analysis Systems

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As physics datasets to be analyzed further increase in size and complexity (for example in HL-LHC era), new tools are being developed and tested on how to process these events faster, optimize storage and access to computing resources, and enable new programming paradigms. Analysis system tools like Awkward-array and COFFEA are developed to create a better functionality and streamline analysis for preservation, reproducibility, and reuse. These tools allow manipulation and access to columnar data structures and use an array-based syntax for event data manipulation in an efficient and numpythonic way. The translation made using a JupyterLab notebook provides a more interactive code in Python, granting a better functionality and a faster time-to-insight. This presentation uses the above tools to perform the Higgs to 4 leptons analysis using CMS Open Data. We further demonstrate that this translation preserves the original analysis that was done using ROOT.

**Primary author:** CRUZ, Brian (UPRM)

**Co-author:** PIVARSKI, Jim (Fermilab)

**Presenter:** CRUZ, Brian (UPRM)

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