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Using data frames in Julia to analyse HEP data

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Data frames have been introduced for statistical analysis with the R language for dataset, much simpler and smaller than data encountered in HEP. A data frame based analysis consist in representing statistical variables in columns of a table, of which each row represents an observation. Julia offers a plethora of packages for data-frame based analysis that can work together thanks to the Julia multiple dispatch and the Table interface, defined in Tables.jl, they comply to. That includes UnROOT.jl, DataFrames.jl, TypedTables.jl, and DTables.jl. We propose in this talk to use the experience gained with the ROOT RDataFrame, the first HEP-specific data frame framework to draw guidelines for data frame based HEP data analysis with Julia and existing packages. We will also consider software development that would be needed to complement existing software.

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