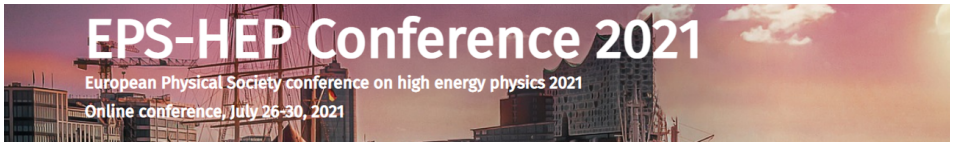

Contribution ID: **888** Type: **Parallel session talk**

Recent advancements in high-performance analysis and statistical modelling with ROOT

Thursday 29 July 2021 16:45 (15 minutes)

ROOT is renovating itself at a fast pace in order to allow physicists to address the unprecedented scale of LHC Run 3 datasets and beyond. Thanks to these recent developments, many HEP analyses could be made 5 to 20 times faster, providing turnaround times in the order of minutes rather than hours.

ROOT's RDataFrame, a high-level interface for data analysis and processing in C++ and Python, provides an ergonomic entry point to many of these improvements. It transparently leverages the power of modern multi- and many-core hardware; its declarative design makes it a robust and simple tool to efficiently pipe ROOT data into standard machine learning frameworks; distributed processing is enabled via ad-hoc back-ends capable to connect, for example, to existing Spark or Dask clusters, also enabling scalable deployment on HPC resources.
At the same time RooFit, ROOT's statistical modelling framework, is being upgraded in order to provide state-of-the-art performance on modern CPUs and GPUs.

This contribution will present recent advancements in these areas as well as upcoming enhancements that will make ROOT easier to use, faster out of the box, and adaptable to future workflows.

First author

Enrico Guiraud

Email

enrico.guiraud@cern.ch

Collaboration / Activity

ROOT Team, CERN

Primary authors: GUIRAUD, Enrico (EP-SFT, CERN); NAUMANN, Axel (CERN); MICHALAINAS, Emmanouil (CERN, Aristotle University of Thessaloniki); TEJEDOR SAAVEDRA, Enric (CERN); REMBSER, Jonas (CERN); MONETA, Lorenzo (CERN); SHADURA, Oksana (University of Nebraska-Lincoln); CANAL, Philippe (FNAL); WUNSCH, Stefan (CERN); HAGEBOECK, Stephan (CERN); PADULANO, Vincenzo Eduardo (CERN, Universitat Politecnica de Valencia)

Presenter: GUIRAUD, Enrico (EP-SFT, CERN)

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