
# HSF - Common Projects in NHEP

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Thanks to all HSF contributors


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These slides are just a starting point for discussion, not an overview presentation

# Some examples of cross-experiment efforts in HSF

- Google Summer of Code 2024
  - 64 proposals for ~33 projects received ⇒ waiting for answer by Google now
- Software Training
  - Group organizes plenty of experiment-independent training activities
- Data Analysis
  - WG held several meetings on Open Data activities, LHC and beyond
  - Discussions on HS3 (HEP Statistics Serialization Standard)
- Event Generators  and Detector Simulation
  - Tuning workshop last year, ~90 participants
  - Big effort in (N)NLO -
- Phoenix Event Display supports multiple communities already
  - Nice article here: https://cerncourier.com/a/event-displays-in-motion/

# More examples

- PyHEP “Python in HEP”
  - One of the most active groups with multiple workshops a year (PyHEP and PyHEP.dev)

- Rucio for data management
  - Rucio - Scientific Data Management (cern.ch)

- ConditionsDB project lead by BNL
  - The HSF Conditions Database Reference Implementation

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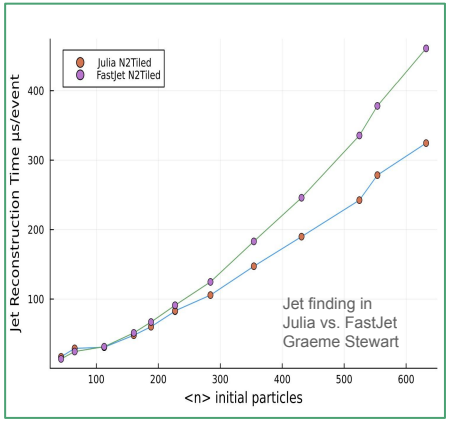
# Successful cooperation with funded efforts

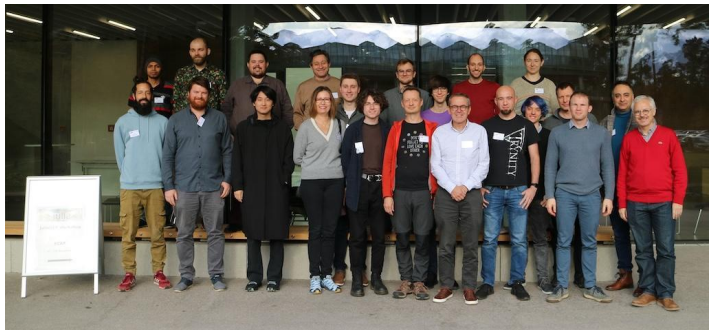
- IRIS-HEP (US)
  - Got funded for a 2nd 5-year period
  - Analysis Grand Challenge (AGC) demonstration event last fall
    - Multiple implementations for AGC tasks available
      - Reference based on coffea (with optional ServiceX)
      - ROOT RDataFrame implementation (ML functionality added this year)
      - Julia-based implementation
      - Columnflow-based Python implementation
    - AGC implementations being used for performance studies on analysis facilities

- SWIFT-HEP (UK)
  - STFC agreed to an extension for the 18 months from April ‘24 - Sep ‘25 at constant effort level
  - "Vision" document under preparation for the programme of the 2nd phase (Oct 25 onwards)
  - Participating in both the Celeritas and AdePT projects to develop Geant4 simulations on GPUs
  - Track reconstruction work focusing on generic algorithms that can be also used at trigger level (e.g. ACTS contributions and FPGA development)

# JuliaHEP - a “new” language for NHEP

- New HSF working group created after CHEP 2023
  - Paper on the Potential of the Julia Programming Language for High Energy Physics Computing [Comput Softw Big Sci 7, 10 (2023)]
- First JuliaHEP workshop organised in 2023 at ECAP in Erlangen, Germany
  - 4 full days (6 to 9 of November)
  - 20 people in person + ~30 people remote
- Many common projects now, for example
  - Analysis Grand Challenge
  - Julia DataFrames Analysis
  - Geant4.jl
  - Jet Finding
- Absolutely worth joining !



Erlangen Centre for Astroparticle Physics (ECAP)

# Summary

- The HSF is a place where people with common problems and interests can join and look for alternative or longer-term cooperation
- Plenty of ideas were transformed into concrete and successful projects

**What are be the themes and projects you would be interested in ?**