Contribution ID: **1336** Type: **Parallel session talk**

An efficient and sustainable approach to precision simulations at the LHC

Friday 19 July 2024 10:00 (15 minutes)

High-precision calculations are crucial for the success of the LHC physics programme. However, the soaring computational complexity for high-multiplicity final states is threatening to become a debilitating bottleneck in the coming years. At the same time, the rapid proliferation of non-traditional GPU-based computing hardware in data centres around the world demands an overhaul of the event generator design.

We propose a flexible and efficient approach for simulating collider events with multi-jet final states, based on the first portable leading-order parton-level event generation framework, along with an improved parton-level event file format with efficient scalable data handling. Our approach lends itself neatly to most modern GPU-accelerated hardware, allowing to better exploit computing resources in large-scale production campaigns, and paving the way for economically and ecologically sustainable event generation in the high-luminosity era.

Alternate track

1. Computing, AI and Data Handling

I read the instructions above

Yes

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Session Classification: Sustainability

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