



Contribution ID: 173 Contribution code: TUE 21

Type: Poster

## Integrating FPGA Accelerators in Athena for use at the ATLAS Event Filter

*Tuesday 22 October 2024 16:00 (15 minutes)*

In the realm of high-energy physics research, the demand for computational power continues to increase, particularly in online applications such as Event Filter. Innovations in performance enhancement are sought after, leading to exploration in integrating FPGA accelerators within existing software frameworks like Athena, extensively employed in the ATLAS experiment at CERN. This presentation delves into the intricacies of this integration, focusing on the system-level challenges posed by the simultaneous utilization of FPGA resources by multiple Athena algorithms in the heterogeneous computing environment explored for the TDAQ Phase II upgrade.

Central to this discussion is the notion of shared state management, particularly concerning the loading of FPGA bitstreams. As multiple algorithms contend for access to the same FPGA, efficient management of the FPGA's state becomes crucial to ensure optimal performance and resource utilization. This work addresses this challenge, presenting insights and strategies for orchestrating FPGA resource sharing within the Athena framework.

While still a work in progress, this contribution provides valuable insights into the ongoing efforts to seamlessly integrate FPGA accelerators into complex research environments, paving the way for enhanced computational capabilities.

**Primary authors:** TDAQ, ATLAS; ANTEL, Claire (Universite de Geneve (CH))

**Presenter:** ANTEL, Claire (Universite de Geneve (CH))

**Session Classification:** Poster session

**Track Classification:** Track 2 - Online and real-time computing