

# Online machine learning based event selection for COMET Phase-I

*Friday, August 5, 2022 5:10 PM (30 minutes)*

The COMET experiment aims to search for a muon to electron conversion with a single event sensitivity of  $3 \times 10^{-15}$  in its Phase-I in order to explore new physics beyond the Standard Model. In the experiment, a high multiplicity environment is expected around the detector. Many accidental hits may cause a high fake trigger rate that cannot meet the DAQ capability, less than 13 kHz.

To overcome this issue, we are developing the machine learning algorithms implemented onto Field Programmable Gate Arrays (FPGAs) to efficiently select signal like events within an order of a microsecond. We have developed the hardware electronics to meet the timing requirement and confirmed that the simple machine learning algorithms could be populated inside the commercially available FPGAs. In this presentation, we will report the current status of the development and future prospects.

## Attendance type

In-person presentation

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