

# Readout for Calorimetry at Future Colliders: The HL-LHC ATLAS Liquid Argon Front-End Readout Electronics and Beyond

*Thursday, 14 December 2023 17:55 (10 minutes)*

Future collider experiments, such as the High-Luminosity Large Hadron Collider (HL-LHC), present challenging experimental environments that require the development of new, custom, high-bandwidth, radiation-tolerant, front-end readout electronics for the calorimeter systems. One such example is the ATLAS Liquid Argon (LAr) calorimeter, which will get an entirely new readout system for the HL-LHC that is fast enough to sample the entire detector with full precision at the 40 MHz bunch crossing frequency. The front-end readout of the calorimeter will be provided by the 128-channel “Front-End Boards 2” (FEB2), which interface a series of custom ASICs needed to satisfy the radiation and physics requirements of the HL-LHC. These ASICs amplify, shape, digitize, and optically transmit serialized data from the LAr calorimeter cells for further off-detector processing. This contribution will describe the development of the FEB2 and its associated custom electronics, while presenting future steps and an outlook on the project. Future readout systems and technology will also be briefly discussed in the context of advanced calorimeters at future collider candidates.

[in-person]

**Primary author:** MATOS, Gabriel (Columbia University)

**Presenter:** MATOS, Gabriel (Columbia University)

**Session Classification:** Lightning Round Talks (2)