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100GbE2FE –Evaluation of Ethernet as a detector front-end readout link

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New-generation detectors are creating a need for flexible, high-speed datalinks. As a part of EP RnD WP6 and in collaboration with WP9, an examination of commercial-grade Ethernet as a front-end readout link is underway, potentially enabling off-the-shelf hardware to be used in data readout systems and cutting down complexity using modern datacenter technologies.
We present the encouraging first results of this RnD effort, evaluating 100Gb/s Ethernet for data readout in the context of typical High-Energy Physics detector requirements. Due to asymmetries in data rate requirements in up- and downlinks, unidirectional Ethernet is examined. Results from a recent radiation study, allowing a preliminary assessment of radiation hardness via statistical analysis, are provided. The application is verified with realistic traffic using a demonstrator to translate from lpGBT to Ethernet and a roadmap for future demonstrators is presented.

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