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A RoCEv2 RDMA based readout prototype for next-generation detectors

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Detectors such as the CTA-LST advanced camera, SWGO or ENUBET are new facilities that will be installed in the near future for different physics targets.

A flexible prototype readout system, utilizing high-channel count fast sampling hardware, directly transfers data to processing servers via RDMA RoCEv2 protocol, eliminating custom backend hardware. For this purpose, a Bluespec Systemverilog core runs on small FPGAs in front-end readout electronics. A hardware prototype with Fast ADCs board and tests will be presented. Developed firmware showcases feasibility and scalability for high-channel count physics experiments.

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