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Fast Data Readout with Microcontrollers For High Energy Physics. AKSHAT TRIPATHI, The University of Texas at Arlington — One of the prominent ways of conducting neutrino experiments is using Liquid Argon Time Projection Chambers (LArTPCs). When charged particles interact with the liquid argon both ionization charge and scintillation light are produced, leaving a detailed trace of the type of charged particle and its trajectory. To detect both the charge and the light, many different detectors are employed which require making high speed analog measurements and converting them to a digital signal. In this presentation I will show work done to find an economical and scalable way of reading out these detectors using commercial microcontrollers and microprocessors (e.g. Raspberry Pi and Arduino). The successful use of these low-cost options have been demonstrated in the cryogenic liquid argon lab at the University of Texas at Arlington and offer the ability to decrease operation costs while maintaining our ability to store and analyze the data from various LArTPC detector components.

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