Special Issue

Developments in Electronics for High-Energy Physics Experiments

Message from the Guest Editor

Modern high-energy physics experiments are increasingly reliant on electronics, from sensors to signal processing (analog or digital). This poses new challenges in the development of electronics due to the harsh environment (radiation), high-speed data throughput, and low noise requirements of these experiments. Historically, to overcome previous problems, application-specific circuits (ASICs) have been designed, combined with boards populated with components off the shelf (COTS) when possible. In large-scale collaborations, physicists and engineers have teamed up to build next-generation detectors with unprecedentedly high density, precision, and data throughput. In parallel, programmable devices, usually based on field-programmable gate arrays (FPGAs), are used in the readout and processing chain once the digital data is obtained. The quantity of devices or boards needed to populate a detector is great enough to consider the complexities of mass production and quality assurance, differing from purely research-based applications.

Guest Editor

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As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal Applied Sciences has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

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