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ASIC design for Particle Physics and Astrophysics

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Application Specific Integrated Circuits (ASICs) are one of the key complex technologies available to detector designers. A number of factors make ASICs essential to Particle Physics and Astrophysics. These include: integration scale, low power dissipation, radiation tolerance. In order to make possible future experiments in the intensity, cosmic, and energy frontiers ASICs should provide new level of functionality at a new set of constraints and trade-offs, like low-noise high-dynamic range amplification and pulse shaping, high-speed waveform sampling, low power digitization, fast digital data processing, serialization and data transmission. All components (chips) should be radiation tolerant and allow minute almost 3D assemblies. The talk presents overview of the state of the art and trends in nowadays chip design, basing partially our ASIC lab experience.

Presentation type

Plenary (25+5 min)

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