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Measurement results for the ASoC: A High Performance Waveform Digitizer System-on-Chip

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Data acquisition systems for state of the art imaging based particle identification detectors are expected to handle large numbers of channels, high accuracy timing, and operate under limited spatial and power constraints. In many applications, full waveform digitization is considered necessary to guarantee the required timing resolution and avoiding the undesirable degradation due to time walk, pile-up and other sources of noise. Such acquisition systems are even more problematic in that the data volume and the computational requirements push the power, cost and space limits even further.
Based on such requirements a new multi-channel Waveform digitizer the ASoC (Analog Readout System on a Chip) has been designed and fabricated. This 4 channel front-end chip operates at 3.2GSa/s and has 16k of sampling depth per channel. In this summary, measurements of analog and digital performance of the asic will be reported. The device has been fabricated in 250 nm process.

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