Contribution ID: **135** Type: **Parallel session talk**

Performance of the ”IRSX” multi-GSa/s, Switched Capacitor Array Waveform Sampling Frontend ASIC

Tuesday, 26 May 2020 16:00 (18 minutes)

The “Ice Ray Sampler X” (IRSX) is a low-power 8-channel waveform sampling frontend ASIC designed for HEP applications, fabricated by TSMC in a 250nm CMOS process. Each input channel samples into a switched capacitor array (SCA) of 32,768 samples depth at an adjustable rate of 2-4GSa/s, for an effective sample buffer depth of 8-16μs. Stored samples can be digitised with 12bit resolution using the integrated Wilkinson ADC, without incurring any dead time on the sampling. The sample storage array is designed for random access for both sampling and digitisation, allowing for flexible acquisition schemes depending on the application.

The IRSX ASIC is currently being used in the 8192 channel front end electronics of the Belle II TOP detector. This talk will present performance figures and characterisation measurements of the IRSX ASIC obtained from test bench campaigns and during the operation in the installed TOP system.

Funding information

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Session Classification: Readout: Front-end electronics

Track Classification: Readout: Front-end electronics