

## Silicon Photomultiplier integrated readout chip (SPIROC) for the ILC: characterization and measurements

*Thursday, 24 September 2009 16:55 (20 minutes)*

The SPIROC chip is a dedicated very front-end electronics for an ILC technical prototype hadronic calorimeter with Silicon Photomultiplier (or MPPC) readout. This ASIC is due to equip a 2,000-channel demonstrator in 2009. The SPIROC chip is the successor of the ILC\_SiPM ASIC presently used for the ILC AHCAL physics prototype incorporating additional features like autotriggering, pipelines, digitization as well as power pulsing. Realized in 0.35um SiGe technology it is designed in order to fulfill ILC final detector requirements of large dynamic range, low noise, low power consumption, high precision and large channel numbers.

The SPIROC is a 36-channel chip. Each channel has bi-gain amplification, auto-triggering capability, a 16-bit depth analog memory array and a 12-bit Wilkinson ADC. It allows time and charge measurements at the same time with digitized data results. The digitization is controlled and read out by the digital part of the chip.

After the submission in June 2007, extensive measurements have been carried out to characterize the chip. Results on linearity, noise, triggering, timing capability and the A/D interface etc. will be presented. The chip has been proven to be successful in calorimeter calibration as well as real physics experiments.

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**Session Classification:** POSTERS SESSION

**Track Classification:** ASIC's