

SPIROC (SiPM Integrated Read Out Chip): Dedicated very front-end electronics for an ILC prototype hadronic calorimeter with SiPM readout.

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SPIROC is a dedicated very front-end electronics for an ILC prototype hadronic calorimeter with SiPM readout. It has been realized in 0.35 μ m SiGe technology. It has been developed to match the requirements of large dynamic range, low noise, low consumption, high precision and large number of readout channels needed.

SPIROC is an auto-triggered, bi-gain, 36-channel ASIC which allows to measure on each channel the charge from one photoelectron to 2000 and the time with a 100ps accurate TDC.

An analog memory array with a depth of 16 for each is used to store the time information and the charge measurement. A 12-bit Wilkinson ADC has been embedded to digitize the analog memory contents (time and charge on 2 gains). The data are then stored in a 4kbytes RAM. A very complex digital part has been integrated to manage all these features and to transfer the data to the DAQ.

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