



Contribution ID: 139

Type: Mini Oral and Poster

## Development of the second version of a 64-ch SiPM readout ASIC for TOP-PET with individual energy and timing digitizer

*Tuesday 13 October 2020 16:20 (1 minute)*

The paper presents the development of the second version of a 64-ch SiPM readout ASIC named DIET, which individually amplifies the input current, extracts and digitizes the energy and the arrival time in each channel. Compared to the previous version, more control logics have been integrated on-chip and hence fewer external control ports are required. The crosstalk between the analog and digital parts of the chip has also been suppressed by isolated substrate with deep nwell. The chip was fabricated in 0.18  $\mu\text{m}$  CMOS process with the die area of  $3.4 \times 3.4 \text{ mm}^2$  and its performance has been preliminarily evaluated. For the energy measurement, the INL and output noise was measured to be less than 0.6% and 4.3 LSB respectively. For the time measurement, the bin size of the time digitizer was measured to be 28.7 ps and the jitter was less than 48 ps. More details on the chip design and test results will be given in this paper.

### Minioral

Yes

### IEEE Member

No

### Are you a student?

Yes

**Authors:** Mr HAO, Jiajun (Tsinghua University); Prof. DENG, Zhi (Tsinghua University)

**Presenter:** Mr HAO, Jiajun (Tsinghua University)

**Session Classification:** Poster session B-01

**Track Classification:** Front End Electronics and Fast Digitizers