A CMOS Front-End for SiPM devices aimed to TOF applications with adjustable threshold and high dynamical range.

Main building blocks of the produced chip:
- Simplified schematic of the Current amplifier “fully balanced” with current mirror.
- Fully differential functionality with a feedback using two identical circuits.
- General architecture of the chip: Eight channels with independent adjustable thresholds.
- The chip. The technology used is AMS 0.35 μm, four metals, double polysilicon.

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**Measurement and test**

- **Dynamical range and linearity for thresholds regulation of the chip:**
  - Simulation results vs measurements.

- **Dark current:**
  - Analog output shown on a DPO.
  - The structure of 1, 2 and 3 hit pixel is clearly visible in the screenshot.

- **Timing results:**
  - Time distribution obtained with a fixed pulse amplitude corresponding to about 27 equivalent hit pixels.

- **Cosmic ray test:**
  - With 1x1mm² Hamamatsu SiPM coupled with a small BC418 plastic scintillator.

- **Cosmic ray test:**
  - Time spectrum obtained with a cosmic rays telescope made of two scintillators of the same type coupled with two PM.