Contribution ID: **10**   Type: **Talk (invited speaker only) The talk is invitation only**

[F11] MONOLITH - picosecond time stamping capabilities in fully monolithic highly granular silicon pixel detectors.

Thursday 27 October 2022 13:05 (30 minutes)

The MONOLITH ERC Advanced project aims at producing a monolithic silicon pixel ASIC with 50μm pixel pitch and picosecond-level time stamping. The two main ingredients are low-noise, fast SiGe BiCMOS electronics and a novel sensor concept, the Picosecond Avalanche Detector (PicoAD). The PicoAD uses a multi-PN junction to engineer the electric field and produce a continuous gain layer deep in the sensor volume. The result is an ultra-fast current signal with low intrinsic jitter in a full fill factor and highly granular monolithic detector. A proof-of-concept ASIC prototype confirms that the PicoAD principle works according to simulations. Testbeam measurements show that the proof-of-concept prototype is fully efficient and achieves time resolutions of 17ps averaged on the pixel surface, with 13ps at the center of the pixel and 25ps at the pixel edge.

contact person e-mail

Primary authors: Prof. IACOBUCCI, Giuseppe (Universite de Geneve (CH)); PAOLOZZI, Lorenzo (CERN); MUNKER, Magdalena (University of Geneva); Dr CARDELLA, Roberto (Universite de Geneve (CH)); ZAMBITO, Stefano (University of Geneva)

Co-authors: PICARDI, Antonio (Universite de Geneve (CH)); FERRERE, Didier (Universite de Geneve (CH)); MARTINELLI, Fulvio (Universite de Geneve (CH)); Mr MILANESIO, Matteo (Universite de Geneve (CH)); GONZALEZ SEVILLA, Sergio (Universite de Geneve (CH)); Mr MORETTI, Théo (Universite de Geneve (CH))

Presenter: Prof. IACOBUCCI, Giuseppe (Universite de Geneve (CH))

Session Classification: Timing Detector