



Contribution ID: 28

Type: **not specified**

Silicon electron multiplier, Production and Characterisation

Wednesday, 30 November 2022 14:25 (20 minutes)

Future innermost tracker detectors will require an enhanced spatial ($< 10 \mu\text{m}$) and temporal resolution (50 ps per hit) along with an increased radiation hardness up to fluences of $10^{17} \text{n}_{eq} \text{cm}^{-2}$. To mitigate these challenges, a new silicon sensor concept is proposed, providing internal gain without relying on doping, the Silicon Electron Multiplier (SiEM). The SiEM incorporates metal electrodes within the silicon substrate which are biased to create a high electric field region providing charge multiplication. A production study using Metal Assisted Chemical Etching has been performed, and results from the first prototype devices are presented. The electrical characterisations and process capability with active media for the prototype production is also discussed.

Primary author: HALVORSEN, Marius Mahlum (University of Oslo (NO))

Co-authors: ROMANO, Lucia (Paul Scherrer Institute); Dr GKOU GKOUSIS, Vagelis (CERN); COCO, Victor (CERN)

Presenter: HALVORSEN, Marius Mahlum (University of Oslo (NO))

Session Classification: New Structures