MATTER AND TECHNOLOGIES

Contribution ID: **87** Type: **not specified**

Tangerine

Friday 20 September 2024 09:54 (18 minutes)

The TANGERINE project investigates a novel 65nm CMOS imaging technology for the next generation of lepton collider vertex/tracking detectors since monolithic active pixel sensors are a promising candidate to fulfil the stringent requirements set by next-generation experiments. The project aims for a spatial resolution of 3um with a temporal resolution below 10 ns while limiting the material budget to 50um silicon. These specifications make a larger-scale prototype an optimal candidate for a beam telescope as an intermediate step.

The investigation of a new process requires detailed studies of basic charge collection properties. A generic workflow for sensor simulations has been set up, built around detailed device simulations based on generic doping profiles combined with Monte Carlo simulations of charge deposition and collection to predict charge collection properties of different sensor geometries and designs. In parallel, three prototypes (MLR1, APTS and DESY ER1) have been designed and tested in laboratory and test beam campaigns. This contribution is going to summarise the simulation and testing efforts with a focus on the most recent studies.

Presenter: VELYKA, Anastasiia (DESY)

Session Classification: Stream 3