Contribution ID: **145** Type: **Oral**

Single cell 3D timing: Time resolution assessment and Landau contribution evaluation via test-beam and laboratory measurements

Thursday, 3 March 2022 16:45 (20 minutes)

The proven potential of 3D geometries at higher than 10^{16} n_{eq}/cm^2 radiation fluences, in combination with a small cell approach, makes them an excellent choice for a combined precision timing tracker. In this study, the timing resolution of a single 50 x 50 μm 3D pixel cell is presented in various temperatures through charge collection measurements with discrete electronics in a laboratory setting. The series is complemented by an extensive test-beam campaign with 160 GeV SPS pions, using a multi-plane timing telescope with an integrated pixelated matrix. Through a varied incidence angle study, field uniformity, Landau contribution and collected charge are treated at incidence angles of +/- 12^o. Using state of the art numerical methods, the choice of instrumentation on signal composition and induced bias on results is also evaluated.

Primary authors: HALVORSEN, Marius Mahlum (University of Oslo (NO)); Dr GKOUGKOUSIS, Vagelis (CERN); COCO, Victor (CERN)

Presenter: Dr GKOUGKOUSIS, Vagelis (CERN)

Session Classification: 3D Sensors

Track Classification: 3D Sensors