Contribution ID: **2** Type: **Talk**

Evaluation of Landau contribution of a single cell 3D 50µm pixel under SPS 120 GeV pion beam

The proven potential of higher than 10^{16} n_{eq}/cm^2 radiation tolerance that 3D geometries offer, in combination with a small cell approach, makes them an excellent choice for combined precision timing and tracking applications. In this study, timing resolution of a single 50 x 50 µm 3D pixel cell is presented in various temperatures though charged collection measurements in a laboratory setting. The series is complemented by an extensive test-beam campaign using 160 GeV SPS pios. A multi-plane timing telescope with integrated pixel tracker is used. Field uniformity, Landau contribution and collected charge are treated using varied incidence angles in the range of +/- 12^o. Relaying on state-of-the-art numerical methods, the choice of instrumentation and subsequent bandwidth limitations are discussed as well as their effects on signal composition and biasing. With the introduction of 7 µm resolution tracking, a detailed cartography of the cell is performed, and the field uniformity hypothesis is evaluated.

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

Presenter: Dr GKOUGKOUSIS, Vagelis (CERN)

Session Classification: New Structures - 3D