TRIESTE - IFAE 2017

Contribution ID: **60** Type: **Poster contribution**

Ultra-Fast Silicon Detectors. A roadmap for the development of particle tracking in space and time

Friday, 21 April 2017 17:00 (1 hour)

In this contribution I will review the most recent progresses towards the development of a silicon detector able to provide accurate measurements in both space and time, the so-called 4-dimension tracking. In particular, the Ultra-Fast Silicon Detectors (UFSD) project is described by discussing working principles of devices, technological state-of-the-art, measurements and TCAD (Technology Computer-Aided Design) simulations. To have a satisfactory timing resolution UFSD are based on the Low-Gain Avalanche Detectors (LGADs) principle, where carriers multiplication is obtained and kept under control through the implantation of a highly-doped p-type layer. This fact ensures larger output signals, very important for accurate time measurements, while providing the advantage of not having high-gain regimes as in standard APD structures, where also noise is typically enhanced. In the presentation I will also review the most recent beam test results, and the quest for a radiation resistant design.

Primary author: MANDURRINO, Marco (INFN)

Co-authors: STAIANO, Amedeo (INFN and CERN); CENNA, Francesca (INFN and Università di Torino); DALLA BETTA, Gian-Franco (University of Trento); PATERNOSTER, Giovanni (FBK); PANCHERI, Lucio (University of Trento); COSTA, Marco (INFN and Università di Torino); FERRERO, Marco (INFN and Università di Torino); OBERTINO, Maria Margherita (INFN and CERN); BOSCARDIN, Maurizio (FBK); CARTIGLIA, Nicolo' (INFN); BELLAN, Riccardo (INFN); ARCIDIACONO, Roberta (INFN, UPO and CERN); SOLA, Valentina (INFN); MONACO, Vincenzo (INFN)

Presenter: MANDURRINO, Marco (INFN)

Session Classification: Archivio Poster

Track Classification: Sessione Nuove Tecnologie