Contribution ID: **26** Type: **not specified**

Study of avalanche multiplication models in Low Gain Avalanche Diodes

To better understand the performances of LGADs in terms of collected charge, it is important to know with high accuracy the models that predict the avalanche mechanism of charge carriers. Several literature models are not able to predict with very high precision the evolution of the avalanche multiplication in LGAD sensors, showing discrepancies with experimental data. This truth is driving the extraction of more accurate impact ionization parameters to better fit the models with empirical data.
This contribution compares a comprehensive set of experimental data with those obtained in simulation. The experimental data have been acquired on LGADs with different designs of the multiplication region, new and irradiated up to fluences of the order of 1015 neq/cm2. The simulation campaign has been performed with the tool Weightfield2, and the avalanche models investigated are Massey and Van Overstraeten optimized models.

Author: FERRERO, Marco (Universita e INFN Torino (IT))

Co-authors: SIVIERO, Federico (Universita e INFN Torino (IT)); LANTERI, Leonardo (Universita e INFN Torino (IT)); MENZIO, Luca (Universita e INFN Torino (IT)); CARTIGLIA, Nicolo (INFN Torino (IT)); ARCIDIACONO, Roberta (Universita e INFN Torino (IT)); MULARGIA, Roberto (University & INFN Turin (IT)); SOLA, Valentina (Universita e INFN Torino (IT))

Presenter: FERRERO, Marco (Universita e INFN Torino (IT))

Session Classification: LGAD