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Study of impact ionization coefficients in Low Gain Avalanche Diodes

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In order to understand better the performance of LGADs, in particular in terms of gain and breakdown voltage, it is important to know with high precision the structure of the devices and have a very accurate impact ionization model. There are several impact ionization models in the literature and many studies have been done in this respect, but no one is able to fit the empirical data taken in the lab with LGADs. Combining simulation and measurements, we extracted more accurate impact ionization parameters: alpha and beta as a function of the electric field and temperature. Also, to understand the validity of the new parametrization, a study of possible sources of error and their influence on the method has been conducted. An update of this work is presented in this talk.

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