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TCAD simulation of impact ionization in non-irradiated LGADs

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We present TCAD simulations of non-irradiated LGAD sensors (HPK and CNM). CV curves are used in combination with SIMS/SRP/TPA-TCT measurements to determine the doping profiles and with them the electric field within the LGAD bulk and gain layers.

Various impact ionization models available within the Synopsys TCAD framework, as well as the Masetti model are evaluated and finally a fit to experimental gain measurements (TCT) is performed to extract model parameters that can be used for further studies. In this presentation we concentration on the concept of fitting. In the second presentation (see E.Curras talk) we focus on Temperature dependence of the impact ionization parameters.

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