

41st RD50 Workshop on Radiation Hard Semiconductor Devices for Very High Luminosity Colliders (Sevilla, Spain)



Contribution ID: 46

Type: **not specified**

Edge-TCT simulation of LGADs in RASER

Thursday 1 December 2022 14:30 (20 minutes)

RADIATION SEMICONDUCTOR (RASER) is a fast simulation software developed by IHEP to estimate time resolution of SiC PIN diodes, based on which we add new functions to confirm the process of getting electric field of Si-LGADs from edge-TCT. In RASER, the electric field and the weighting field are calculated by FENICS. The current induced by electron-hole pairs is derived by Shockley-Ramo's theorem. The simulated signal is synthesized with noise taken from experiment as well as the effect of amplifier resistance and detector capacitance. The physical LGADs are fabricated by HPK, the electric field of which is estimated from the waveforms under illumination of infra-red laser beams. The results show good agreement between experiment and simulation.

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Session Classification: Low Gain Avalanche Detectors