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Analysis of TCT measurements of highly irradiated silicon pad diodes under forward bias

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For highly irradiated silicon sensors the electric field under reverse bias takes the shape of a double junction with high field strength near the implants and a region of low field strength in between. For this condition it is not trivial to disentangle the electric field, (de-)trapping of charge carriers, and the drift velocity all of which are a function of the irradiation and the position in the sensor.
However, to a good approximation the electric field is independent of position for forward bias and it can be assumed that also the trapping rates are independent of position. We started to analyze transient current technique (TCT) measurements of forward biased HPK campaign silicon pad diodes irradiated with doses above 10^{15} GeV protons/cm² to obtain information on the trapping and detrapping rates as a function of the electric field and the dose. The analysis and first results will be presented.

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