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Charge multiplication in irradiated sensors after long annealing times

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In previous studies we presented results on long term annealing studies in irradiated p-type sensors until charge multiplication occurred.
Recently we carried out a deeper investigation on the charge multiplication phenomena of the annealed sensor, in particular its instability. We will show how it depends on bias voltage cycling and (less) on temperature. One sensor irradiated with neutrons to a fluence of $2e15\,\frac{n_{eq}}{cm^2}$ and annealed at 70° C showed dramatic changes in the signal behavior in time. A deeper investigation suggests the onset of plasma effect in the conduction mechanisms when in heavy charge multiplication.

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