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Study of Evolution of MPPC Properties Induced by Neutrons

Thursday, 14 June 2018 09:50 (20 minutes)

During my talk I would like to show and discuss results of evolution of MPPC properties during irradiation by neutrons. Two models of Multi-Pixel Photon Counters: S13360-3050CS and S13360-6050CS from Hamamatsu with different size ($3\times 3\text{ mm}^{-2}$ and $6\times 6\text{ mm}^{-2}$, respectively) and the same subpixel pitch size ($50\text{ }\mu\text{m}$) were irradiated by neutrons from two sources: PuBe source with continuous energy spectrum up to 11~MeV and mono-energetic 4.8~MeV neutrons produced in (d,d) reaction. For both cases the neutron fluence/(MPPC size) in a range of 10^9 mm^{-2} was achieved. The observed changes of current-voltage characteristics and breakdown voltage evolution for neutron fluence increase will be shown. The energy resolution degradation of 662 keV gamma line from ^{137}Cs , obtained for non-irradiated GAGG scintillator, as a function of neutron fluence will be presented. Finally, calculated contribution of noise component in measured energy resolution will be also shown.

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