The use of Silicon Photo-Multipliers (SiPMs) has become popular in the design of High Energy Physics experimental apparatus with a growing interest for their application in detector area where a significant amount of non-ionizing dose is delivered. For these devices, the main effect caused by the neutron flux is a linear increase of the leakage current.
In my IFF period, I have developed a technique that provides a partial recovery of the neutron damage on SiPMs by means of an Electrical Induced Annealing. Tests were performed on a sample of three SiPM arrays (2× 3) of 6 mm^2 cells with 50 μm pixel sizes: two from Hamamatsu and one from SensL. These SiPMs were irradiated up to an integrated neutron flux up to 8×10^{11} $n_{1MeV-eq}/cm^2$ at Dresden. My techniques allowed to reduce the leakage current of a factor ranging between 15-20 depending on the overbias used and the SiPM vendor. This reduction is a crucial point for the use of the SiPM in the Mu2e-2 experiment.

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