## SiPM Radiation: Quantifying Light for Nuclear, Space and Medical Instruments under Harsh Radiation Conditions



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## SiPM Irradiation and Characterization with proton and x-ray beams: the TIFPA-INFN facilities in Trento (Italy)

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Total Ionizing Dose and Displacement Damage Effects on SiPM are standard required characterizations for applications of SiPM in every Nuclear, Space and Medical Instruments. The TIFPA-INFN Center in Trento (Italy) is equipped with two facilities, the Proton Experimental Area and the x-ray Irradiation Laboratory, where these characterizations can be performed with a proton beam and a x-rays beam. The Proton Experimental Area is part of the Trento Proton Therapy Center, a medical facility where protons are used for the treatment of oncological patients. Proton energy can be tuned in the [70-230] MeV range, the typical proton energy range used for medical applications. The x-ray Irradiation Laboratory is a biological/biophysics laboratory equipped with a x-ray irradiation cabinet containing a 3kW x-ray tube with tungsten anode and [30-195] kV tunable voltage.

In this talk will be described in details all the irradiation configurations of the Proton Experimental Area and how the the x-ray irradiation cabinet can be used for SiPM irradiation. The preparation and execution of a proton and x-ray irradiation campaign performed on SiPMs designed and produced by FBK in 2021 will be described also, showing the software packages used for the planification and the configurations adopted in these two facilities for this campaign.

References:

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