

G-RAD Workshop - Grenoble Radiation Testing of semiconductor devices and systems



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LNL- The NEPIR Facility - Fast neutrons

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We describe NEPIR, the fast-neutron irradiation facility under development at the 70 MeV cyclotron SPES facility of the INFN laboratory of Legnaro (LNL). The facility will be used to investigate neutron-induced Single Event Effects (SEE) in microelectronic devices and systems. It will be constructed in stages, according to the available funds. The initial funded configuration, based on a novel thick Be neutron production target, will be operational in 2023. In its final configuration NEPIR will have two target systems: one will deliver a Quasi Mono-energetic Neutron (QMN) beam, of multidisciplinary interest, with an adjustable energy peak in the 20–70 MeV range; the second target will deliver a specialized neutron beam with a continuous energy spectrum resembling that of neutrons at sea-level produced in cosmic ray air-showers in the 1-70 MeV energy range. In closing we describe ways, presently under preparation at LNL, to use the 6 MeV Van der Graaf and the 15 MV XTU Tandem of LNL to produce nearly monochromatic fast neutrons that would complement the QMN system of NEPIR allowing one to probe for SEE below 20 MeV.

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