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## Status report on the Legnaro NEPIR facility

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The NEPIR (Neutron and Proton Irradiation facility) project is a new irradiation facility at INFN Legnaro National Laboratories (LNL). This contribution focuses on the most recent progress of the project, which is in an advanced design phase and partially funded.

The facility will exploit the LNL 35-70 MeV, high current proton cyclotron to feed two different compact neutron sources in order to generate high flux neutron beams with different energy spectra.

The first will use a thin lithium target to produce a Quasi Mono-energetic Neutron beam (QMN), with controllable energy peak in the 35-70 MeV range; the calculated flux at maximum energy and maximum current (10 microA, limited by radioprotection regulations) is  $\sim 3 \cdot 10^5 \text{ n cm}^{-2} \text{ s}^{-1}$ , at a test point 3 m downstream. A carbon energy degrader will be used to further decrease the proton beam energy down at least to 20 MeV. This versatile tool will be an important addition to the park of research infrastructures for National and European research.

The second source will be used to study Single Event Effects in electronics induced by neutrons. The source will use 70 MeV protons to produce fast ( $E > 1 \text{ MeV}$ ) neutrons with a white energy distribution similar, in the 1-65 MeV energy range, to that of neutrons in high energy cosmic ray showers found at flight altitudes and sea level. At 4 m from the neutron production target, the maximum neutron flux will be  $\sim 7 \cdot 10^6 \text{ n cm}^{-2} \text{ s}^{-1}$ . Using additional moderator panels, the same source can be used to further shape the white spectrum to resemble that of other environments (eg. surface of Mars).

### Selected session

Accelerators and Instrumentation

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