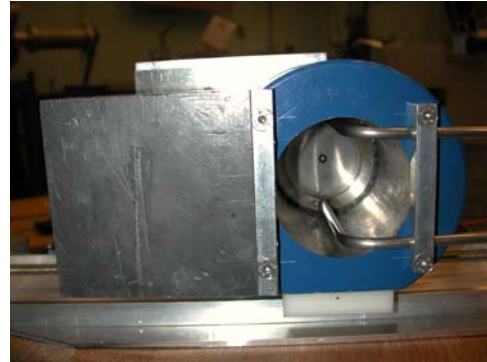


White neutron source at TSL: first results of beam characterization

TSL has started a project named **ANITA** (Atmospheric-like Neutrons from thIck TArget). Neutrons with the “white” spectrum are produced by irradiation of a thick tungsten target by protons with energy of 180 MeV. The new neutron source has been installed at the same beam line as the existing quasi-monoenergetic neutron (QMN) source [1, 2]. The neutron collimator structure, the user area, and the neutron monitors are common for white-neutron and QMN modes. Therefore, it is feasible for user groups to run alternately with either white-neutron or QMN beam within the same campaign and without rearrangements of equipment at the user area. Similar to the QMN mode, user groups may choose the size of the white neutron field in the range from 1 cm to 1 m.



The ANITA facility undergoes commissioning and characterization, in collaboration with research and industrial partners from France, Germany, UK, US, and Sweden. Characterization techniques include measurements of neutron flux, spectrum, and profile using proton recoil spectrometry, fast fission chambers, thin-film breakdown counters, CCDs, and computer memory devices. First experimental estimates have been recently obtained for the “LANSCE-equivalent neutron flux” of neutrons above 10 MeV: $\sim 10^6$ neutron/cm²/s, normalized to the standard proton beam current of 200 nA and the standard user position located at 2.5 m from the source. This flux corresponds to acceleration factor of $\sim 3 \cdot 10^8$ relative to the atmospheric neutron flux at the sea level in NYC [3].

A publication with more details about the ANITA facility is under preparation.

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