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SNS Shielding Analyses Overview

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The Spallation Neutron Source (SNS) is an accelerator driven neutron scattering facility for materials research, presently operating at 1 MW proton beam power at 1 GeV proton energy on target. Although the facility is completed and in operation, there is still a wide range of demands for shielding analyses. During accelerator operation some parts of the facility are being redesign and improved, and neutronics optimizations are important part of the process. Linac access way redesign is an on going work. Additional facilities for test purposes for accelerator structures being built and require shielding. Recently linac cryomodule RF test facility and a RFQ test stand were constructed. way. A concept study for standalone electronics irradiation station for single-event effects in avionic and ground based systems is in works to scope out the feasibility and cost. Shielding requirements are a huge player in the construction cost. The neutron scattering instruments US-ANS and Corelli are will be commissioned soon, which requires extensive work on beam line and instrument enclosure shielding. The neutron imaging instrument VENUS is presently in design; also there shielding is an integral part of the instrument and a large cost factor.. Another large area of neutronics/shielding work is the prediction of isotope composition for spend structures from accelerator and target facilities in order to do waste characterization analyses and to develop proper transport and storage containers such as spent proton beam window and target modules, neutron beam line shutters and neutron beam collimators

Primary author: POPOVA, Irina (ORNL)

Co-authors: IVERSON, Erik (ORNL/SNS); GALLMEIER, Franz (ORNL/SNS); WEI, Lu (ORNL/SNS); IGOR, Remec (ORNL/SNS)

Presenter: POPOVA, Irina (ORNL)

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