

NEUTRONS FOR SCIENCE AT SPIRAL-2

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Neutrons in the energy range between a few MeV and a few tens of MeV play a key role in numerous domains. In fundamental research the neutron is an interesting probe of nuclear matter since it is not sensitive to the coulomb barrier. A large number of applications like transmutation of nuclear waste, design of future fission and fusion reactors, accelerator driven systems and nuclear medicine use fast neutrons. For most of these innovative applications reliable measurements are necessary to improve the evaluated databases used by nuclear transport codes. Neutron facilities are also necessary for the test and development of new detectors and for the study of the single event upsets in the electronic components. The Neutrons For Science (NFS) facility has been built for this purpose at GANIL. NFS will use the thin or thick target of lithium or beryllium to convert the high intensity ion beam of SPIRAL-2 linear accelerator into a high intensity pulsed neutron beam. Continuous and quasi-mono-energetic spectra will be available with energy up to 40 MeV. The facility include a long (35 m) experimental hall for time-of-flight experiments and irradiations stations located in the vicinity of the converters. After a description of the facility and of its characteristics, the physics cases and some examples of experiments foreseen in the short and medium term will be presented. An extension to the studies which could be performed at the IFMIF/ELAMAT facility will be addressed.