

## **Study of HPGe detector shielding for use in inelastic neutron scattering experiments at the n\_TOF/CERN facility**

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The study of inelastic scattering reactions is important both in basic research as it can provide an insight on nuclear structure and aid in the validation of theoretical models, as well as in the field of applications.

The purpose of this work is to investigate the contribution of HPGe detector shielding used in inelastic neutron scattering experiments at the n\_TOF facility at CERN.

The study was carried out mainly through GEANT4, a package for simulating the path and interactions of radiation through matter. In the present work, this computational package was used to simulate the various shielding materials and geometries for the CANBERRA's EGPC 25S/N 540 p-type coaxial prototype HPGe, as well as to reproduce the results derived from the interaction of the beam with the shielding itself. The aim of the work is to optimize the experimental set-up, through simulations, by adding, testing and comparing various shieldings.