

Majorovits

### **Limitations of rare event HPGe experiments due to neutron induced backgrounds**

Next generation  $0\nu\beta\beta$ -decay searches aim for a sensitivity of the half life of  $\sim 10^{27}$  years. An increase of target mass and a reduction of background by a factor of 10 will be necessary. Understanding of cosmic ray and neutron induced backgrounds are crucial in predicting sensitivities of future experiments. Uncertainties on simulations of neutron transport and multiplication in common shielding materials are substantial. For the validation of next generation experiments efforts have to be made to understand cosmic ray induced neutron spectra and fluxes and their effects on detectors and materials close by.

GERDA phase II measurements will be analyzed to search for the presence of the neutron induced background, such as the decay of Ge-68 and Co-60 to validate model predictions. Different measurements with different shielding overburdens will be made and will be used to improve the uncertainties on the predicted sensitivities of future experiments.