

Development and implementation of an ultra low background Array of HPGe detectors

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Content

The Center for Underground Physics (CUP) of IBS has developed in collaboration with CANBERRA an ultra low background Array of 14 p-type coaxial HPGe detectors, each having a 70% relative efficiency.

This instrument has been designed and constructed with materials selected in radio purity to reach the lowest possible intrinsic background. The contribution to the instrument background due to the contamination in primordial radionuclide of all the raw materials has been evaluated by performing Monte Carlo simulations and comparing them to measured gamma spectra of the sample materials (using other HPGe detector systems).

To further reduce the external radioactive background, a dedicated shielding has been designed and the Array is currently installed in the Y2L underground laboratory. The expected sensitivity of the instrument allows to perform rare decays searches such as the measurement of $^{180\text{m}}\text{Ta}$ decay.

In this contribution the development of the instrument, the installation and the preliminary background measurement will be presented.

Summary

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