

DAQ optimization, signal processing and simulations for an ultra low background HPGe detectors Array

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In the Y2L underground laboratory, a newly developed ultra low background Array of 14 HPGe detectors has been recently installed and is currently operating. To register single and coincidence spectra of all the detectors it was necessary to develop a dedicated DAQ system and analysis software. The low radioactive background of the Array can be exploited to perform not only high sensitivity material selection for rare event physics experiment but also for the measurements of rare decays. Monte Carlo simulations, based on Geant4, have been performed to evaluate the expected sensitivity of the instrument concerning the measurement of $^{180\text{m}}\text{Ta}$ rare decay. The details of the DAQ system, signal processing and simulation results will be presented in this contribution.

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