

Pixel detectors in double beta decay experiments, a new approach for background reduction

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Double beta decay experiments are challenging frontiers in contemporary physics. These experiments have the potential to investigate more about neutrinos (eg. nature and mass). The main challenge for these experiments is the reduction of background. The group at IEAP, CTU in Prague is investigating a new approach using pixel detectors Timepix. Pixel detector offer background reduction capabilities with its ability to identify the particle interaction (from the 2D signature it generates). However, use of pixel detectors has some challenges too (e.g. presence of readout electronics near the sensing medium, heat dissipation, etc.). Different aspects of pixel setup (identification of radio-impurities, selection of radio-pure materials) and proposed experimental setup will be presented. Also, results of preliminary background measurements (performed on surface and in the underground laboratories) using the prototype setups will be presented.

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