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Surface induced background in CUORE

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Bolometers are very promising detectors for neutrinoless Double Beta Decay ($0\nu\text{DBD}$) searches because of their excellent energy resolution, the high detector efficiency and a wide choice of different materials used as absorber. In order to further improve the sensitivity achievable, in recent years many studies have been done in order to understand and thereby reduce the radioactive background. The current model of the background in the $0\nu\text{DBD}$ region assumes that it is due mainly to degraded α 's from surface contaminations of materials faced to crystals. This model is derived from the Cuoricino experience (the first step towards CUORE) and it is mainly based on the study of coincident events between TeO_2 bolometers since conventional techniques haven't enough sensitivity to study the very low level of surface contaminations reached. In order to reach the ability to identify the nature of the background observed in all the TeO_2 bolometric tests and then confirm the background model, a very accurate measurement with BGO scintillating bolometers was performed. Results obtained with this technique and details on the surface induced background in the bolometric technique will be presented.

for the collaboration

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