



Contribution ID: 734

Type: poster

Neutron identification in the SoLid experiment

The SoLid experiment aims to make a measurement of very short baseline neutrino oscillations using reactor anti-neutrinos. For this purpose, a highly segmented detector was build out of PVT cubes lined with a $^6\text{LiF:ZnS(Ag)}$ layer.

Unlike neutrino experiments conducted deep underground, neutrino detectors used in a reactor environment need to tolerate high levels of background radiation. Therefore, a reliable distinction between the neutrons produced in inverse beta decay events and signals caused by other background interaction is crucial.

This poster presents a unique neutron identification method used in the SoLid experiment: The composite of scintillation material with different time constants enables the efficient use of pulse-shape analysis to discriminate against electromagnetic signals.

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Track Classification: Neutrino Physics