



ID de Contribution: 54

Type: **Poster**

Light yield and energy resolution studies for the SoLid phase I

lundi 9 mai 2016 15:30 (1 heure)

The SoLid experiment is searching for sterile neutrinos from a nuclear research reactor. It looks for inverse beta decays (a positron and a neutron in delayed coincidence) with a very segmented detector made of thousands of scintillating cubes. SoLid has a very innovative hybrid technology with 2 different scintillators. The cubes are made of Polyvinyl-Toluene (PVT) to detect the positrons and 6 LiF:ZnS sheets are put on one face of each PVT cube to detect the neutrons. The scintillation signals are brought by wavelength shifting fibers to MPPCs. It allows us to do an efficient pulse shape analysis to identify the signals from neutrons and positrons. The first module SM1 (288 kg) took data in 2015 and the construction of SoLid phase 1 (~ 1.5 t) is about to start. To improve the energy resolution of SoLid phase 1, we have tried to increase the light yield. To study the positron light yield on the PVT, we have built a test bench with a ^{207}Bi source.

We have improved the design of the cubes, their wrapping or the type and the configuration of the fibers. We managed to increase the PVT light yield by about 40 % and improve the resolution of the positron energy on the test bench from 20 % to 16 % at 1 MeV.

Auteur principal: Mlle BOURSETTE, Delphine (LAL)

Orateur: Mlle BOURSETTE, Delphine (LAL)

Classification de Session: Poster session

Classification de thématique: Particle Physics