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SoLid: A compact neutrino detector for very short baseline neutrino experiments (12' + 3')

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The SoLid experiment is currently one of the most compact and most finely segmented neutrino detectors. Deployed near a compact and intense neutrino sources, such as the Belgian high-power BR2 research reactor, it is an ideal detector to search for sterile neutrinos signatures.

A novel approach to measuring reactor anti-neutrinos was developed based on an innovative sandwich of composite Polyvinyl-Toluene and 6LiF:ZnS scintillators.

It consists of 5cm x 5cm x 5cm cubes of PVT, with 6LiF:ZnS foils, read out by a network of wavelength shifting fibers and MPPCs.

In this talk we will review the design, the operation characteristics, and the performance of a 300 kg full-size detector prototype that was deployed and operated at 5m distance from the BR2 reactor core in 2015.

The plan is to improve upon the current design and gradually extend the sensitive mass in order to complete a 1.5 tonne detector by the beginning of 2017.

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