



## Poster session 3 – Wednesday 6 July

### P3.053 **Detector design and prototyping for the PROSPECT short-baseline reactor experiment**

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*on behalf of PROSPECT collaboration*

PROSPECT is a U.S.-based, multi-phase, 2-detector reactor antineutrino experiment whose primary goals are to probe short-baseline oscillations and perform a precise measurement of the  $^{235}\text{U}$  reactor antineutrino spectrum. The detectors will be deployed at short baselines of  $\sim 7\text{-}19\text{m}$  from the High Flux Isotope Reactor at the Oak Ridge National Laboratory. This close proximity to a reactor core poses detector design challenges such as tight space constraints, limited overburden and reactor-correlated backgrounds. Therefore, PROSPECT has designed a segmented detector concept using  $^6\text{Li}$ -loaded liquid scintillator that provides excellent background rejection capabilities, as well as good position and energy resolution, in order to meet the physics goals of the experiment. A multi-year R&D program spanning numerous prototypes has validated this approach in both laboratory and reactor settings. Here we describe the important features of the PROSPECT detector design, and the supporting prototype detectors and results from their operation.

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