



## Poster session 2 – Tuesday 5 July

### P2.088 Reactor antineutrino detector: iDREAM

A Oralbaev<sup>1</sup>, M Gromov<sup>2</sup>, G Lukyanchenko<sup>3</sup>, B Obinyakov<sup>3</sup>, M Skorokhvatov<sup>3</sup>, S Sukhotin<sup>3</sup>, A Chepurinov<sup>4</sup>, A Etenko<sup>3</sup> and G Novikova<sup>5</sup>

<sup>1</sup>NRC Kurchatov institute, Russia, <sup>2</sup>MSU, Russia, <sup>3</sup>NRC "Kurchatov institute", Russia, <sup>4</sup>SINP MSU, Russia, <sup>5</sup>INR RAS, Russia

Industrial Detector for REactor Antineutrino Monitoring (iDREAM) is a compact ( $\sim 3 \text{ m}^3$ ) industrial detector. It is dedicated for remote monitoring of PWR reactor operational modes by neutrino method in real-time. Measurements of antineutrino flux from PWR allows to estimate a fuel mixture in active zone and to check the status of the reactor campaign for non-proliferation purposes. LAB-based gadolinium doped scintillator is exploited as a target. Multi-zone architecture of the detector with gamma-catcher surrounding fiducial volume and plastic muon veto above and below ensures high efficiency of IBD detection and background suppression. DAQ is based on Flash ADC with PSD discrimination algorithms while digital trigger is programmable and flexible due to FPGA.

The assembling of the detector is completed. To test the detector together with DAQ and slow control system a distilled water was exploited as a target, which enables the use of Cerenkov radiation from cosmic muons as a physical signal. The detector response fits the expected MC simulated data. Study of the long-term stability has conducted for samples of original liquid organic scintillator developed for iDREAM