

The ISMRAN Collaboration : (Indian Scintillator Matrix for Reactor Anti-Neutrino detection)

Gd wrapped 100 units of Plastic Scintillators (1 ton), read through PMTs & Digitizers

Motivation : Reactor monitoring & possible search for sterile neutrinos

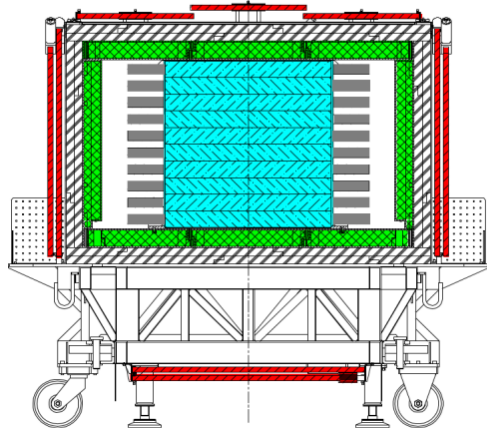


Fig. 1 :
Engineering Design of ISMRAN



Fig. 2 :
mini-ISMRAN (16% of the proposed 1 ton) in Reactor Hall with Lead and BP shieldings & low statistics data in R-Off and R-On



Fig. 3 :
Full ISMRAN being integrated for cosmogenic background measurement in a non-reactor environment.



Fig. 4 :
Digital DAQ system using 16 ch, 500 MS/s, CAEN digitizers. Pulse processing, triggering and coincidences build on FPGA on board.

Nuclear Inst. and Methods in Physics Research, A 911 (2018) 104–114

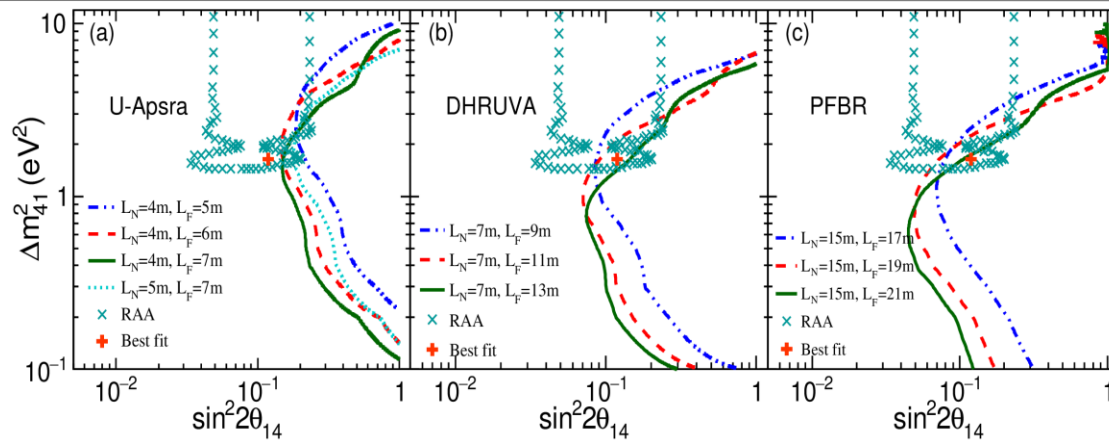


Fig. 5 : The expected active-sterile neutrino mixing sensitivity of ISMRAN set up in $\sin^2 2\theta_{14} - \Delta m^2_{41}$ plane Placing the same detector at different positions for six months each (Total exposure 1 ton-yr)

Physical Review D 102, 013002 (2020)

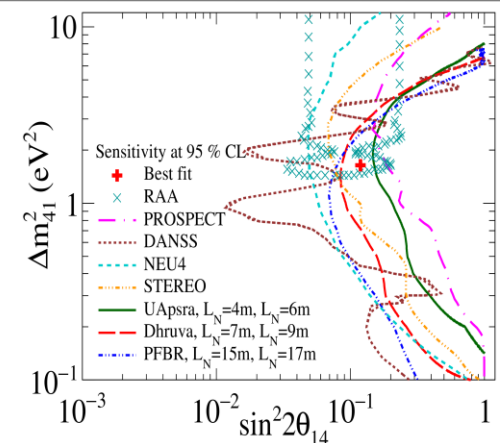


Fig. 6 : Comparison with other experiments