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## **OSIRIS –The Online Scintillator Internal Radioactivity Investigation System of JUNO**

*Monday 28 August 2023 17:15 (15 minutes)*

The Online Scintillator Internal Radioactivity Investigation System is an 18-ton pre-detector of JUNO, currently under commissioning in south-west China. During the 6-month filling phase of the JUNO main detector, it will be responsible for the monitoring of the radiopurity of the liquid scintillator filled into the JUNO central detector. Fast  $^{214}\text{Pb}/^{214}\text{Bi}$ / $^{214}\text{Pb}/^{214}\text{Po}$  coincidences serve as a main measurement channel for OSIRIS' high sensitivity to  $^{238}\text{U}/^{232}\text{Th}$  contaminations in the liquid scintillator. In addition, contamination measurements of  $^{85}\text{Kr}$  and  $^{14}\text{C}$  are also foreseen. OSIRIS is located 700m underground in the JUNO laboratory near the central detector. Its cylindrical central vessel is surrounded by 64 JUNO 20-inch PMTs and embedded into a water Cherenkov muon veto. Calibration of the detector will be done by an automated calibration unit featuring radioactive sources and a fast pulsed LED, as well as by a pico-second laser calibration system responsible for time- and charge calibration. After OSIRIS' main purpose of monitoring the liquid scintillator has been fulfilled, a consecutive physics phase addressing solar neutrinos and  $0\nu\beta\beta$  decay is foreseen.

### **Submitted on behalf of a Collaboration?**

Yes

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