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Neutrino physics and astrophysics with the JUNO detector

The Jiangmen Underground Neutrino Observatory (JUNO) is a 20 kton liquid scintillator multi-purpose underground detector, under construction in Jiangmen City in China and expected to start data taking around 2021.

The main goal of the experiment is the determination of the neutrino mass hierarchy with more than three sigma significance and the measurements with high precision of neutrino oscillation parameters using electron anti-neutrinos emitted from two near-by (baseline of about 53 km) nuclear power plants.

Besides, the unprecedented performance for a liquid scintillator type detector in target mass, energy resolution, energy calibration precision and low-energy threshold features a rich physics program for the detection of low-energy astrophysical neutrinos such as galactic core-collapse supernova neutrinos, solar neutrinos and geo-neutrinos.

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