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Status and physics potential of the JUNO experiment

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The Jiangmen Underground Neutrino Observatory (JUNO) is a 20 kton multi-purpose liquid scintillator detector with an unprecedented energy resolution of 3% at 1 MeV being built in a dedicated underground laboratory in China and expected to start data taking in 2021. The main physics goal of the experiment is the determination of the neutrino mass ordering with a significance of 3-4 sigma within six years of running using electron anti-neutrinos coming from two nuclear power plants at a baseline of about 53 km. Beyond this fundamental question, JUNO will also have a very rich physics program including the precise measurement at a sub-percent level of the solar neutrino oscillation parameters, the detection of low-energy neutrinos coming from galactic core-collapse supernova, diffuse supernova background, the Sun, the Earth (geo-neutrinos) but also proton decay searches. This talk will give an overview on the JUNO physics potential and the current status of the project.

Content of the contribution

Experiment

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