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The Jiangmen Underground Neutrino Observatory

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JUNO is a Liquid Scintillator Detector (LSD) currently under construction in the south of China (Jiangmen city, Guangdong province). JUNO aims to detect reactor antineutrinos at a baseline of 53 km, with the goal of determining the neutrino mass ordering and performing a sub-percent measurement of three of the neutrino oscillation parameters. Its physics programme also includes the detection of supernova neutrinos, geoneutrinos and possibly solar neutrinos, making it a real multipurpose neutrino experiment. Once completed, JUNO will be the largest LSD ever built, consisting in a 20 kt target mass made of Linear AlkylBenzene liquid scintillator, monitored by 17000 20"high quantum efficiency (QE) photomultipliers (PMTs) providing a ~75% photo-coverage. Large photo-coverage and large QE are indeed pivotal to reach a light level of 1200photo-electrons/MeV meant to yield an unprecedented 3% total energy resolution at 1 MeV. JUNO will also be the first LAND to exploit a double calorimetry system comprising an additional set of 25000 3"PMTs meant to address the non-stochastic component of the energy resolution. In this talk I will describe JUNO's detector design, I will review its physics capabilities and I will shortly describe the experimental site and the related civil engineering.

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