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Status of the JUNO observatory and Brazilian contribution

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The Jiangmen Underground Neutrino Observatory (JUNO) is a 20 kiloton liquid scintillator detector to be placed 700-meter deep underground at 52.5Km from 10 nuclear reactors delivering at present 26.6TW of thermal power. The detector, designed for an unprecedented 3% energy resolution at 1MeV, has a rich physics potential including the determination of the neutrino mass hierarchy, improvement of precision of oscillation parameters, observation of supernovae and geo-neutrinos and so on. Control of the systematics of the energy response is crucial to archive the designed energy resolution as well as to reach 1% precision of the absolute energy scale. For this reason there are ~18,000 20-inch photo-multiplier tubes (PMTs) in the central detector with an optical coverage greater than 75%. MA Small-PMT system of 3-inch PMT has been approved to provide a unique way to calibrate the energy response. After an overview of the observatory, the physics concept of double calorimetry will be discussed. Finally the contribution of Brazilian institutions to this international effort will be described.

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