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Measurement of 3D distance from JUNO Detectors to Nuclear Power Reactors

Abstract: The primary goal of JUNO is to determine the mass hierarchy of neutrinos. Accurate measurement of the distance from the center of the JUNO detector to the nuclear power reactors is essential for providing relevant parameters necessary for the physical analysis of the neutrino experiment. This paper presents the establishment and measurement methodologies of the control network for JUNO. It utilizes Global Navigation Satellite System (GNSS) positioning technology, along with total stations and laser trackers, to accomplish large-scale three-dimensional distance measurements. Furthermore, various software tools are employed for adjustment processing and analysis of the results. Ultimately, the three-dimensional distance from the JUNO detectors to the nuclear power reactors satisfies the design requirement of ±0.5 meters.
Key words：JUNO, Nuclear Power Reactor, Distance Measurement, Precision

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