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Strategies of radon and cleanliness control in underground environment at JUNO

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JUNO is building a 20 kt liquid scintillator (LS) detector at a depth of 700 m underground, and the radioactive control of the environment is very important. The whole underground space at JUNO site is about 300,000 m³, including the main hall of 120,000 m³ and a number of attached halls and tunnels, making it the largest underground laboratory in the world. Since the laboratory is located underground, the rocks and water will release large amounts of ²²²Rn (radon) into the air. The detector components have the risk of air exposure during installation, so radon and its daughter nuclei can attach to the surface of the material and contaminate the LS. Therefore, the control of radon concentration in the experimental hall is very important. Moreover, the residual dust is another source of radioactive background. The cleanliness inside the experimental hall should reach the level of Class 100,000 or better. In order to achieve an installation environment with low radon and well cleanliness, the optimization of the ventilation was carried out in the experimental hall. The radon concentration in the experimental hall has been stabilized at about 100 Bq/m³ with great efforts. Both the radon and the cleanliness level have met the requirements. Details about the strategies of radon concentration and cleanliness control in underground environment at JUNO site will be reported in this talk.

Submitted on behalf of a Collaboration?

Yes

Author: Dr ZHAO, Jie (Institute of High Energy Physics)

Presenter: Dr ZHAO, Jie (Institute of High Energy Physics)

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