

# 11th International Workshop on Ring Imaging Cherenkov Detectors (RICH2022)



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## The JUNO Water Cherenkov Veto system

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The Jiangmen Underground Neutrino Observatory (JUNO) is a 20 kton liquid scintillator detector with the primary physics goal of the neutrino mass hierarchy determination. The detector will be built in a laboratory at 700-m underground. . A Water Cherenkov veto system will be built for cosmic muon detection and background reduction. Outside the central detector, the pool is filled with 34 kton ultrapure water. The water Cherenkov light produced by cosmic muons are detected by 2400 MCP-PMT's. The inner surface of the water veto is covered with Tyvek reflector to increase the light collection efficiency. A water system is used for water purification and circulation to keep a high water quality for optimal detector performance. A set of radon removal equipment will be integrated with the water system to reduce the radon-induced background in the central detector. Based on prototype studies, the radon concentration in water in water could be reduced to 10mBq/m<sup>3</sup>. The cosmic muon detection efficiency of the water Cherenkov detector is >99%. With this veto system, the cosmic muon-induced fast neutron background can also be reduced to ~0.1/day level.

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