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Status and Prospect of the COHERENT D2O Detector for the Neutrino Flux Normalization

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After the detection of CEνNS, the COHERENT collaboration is exploring new physics by precisely measuring the process. However, the uncertainty of the neutrino flux normalization is limiting the precision. To reduce the uncertainty, a heavy water (D_2O) detector has taken data at the Spallation Neutron Source (SNS) at Oak Ridge National Laboratory (ORNL) since 2023. By utilizing the well-understood charged-current interaction of deuterium, this D_2O detector is anticipated to reduce the flux uncertainty from 10% to less than 3% within a few years. In addition, the second module, made of water (H_2O), was recently installed to further understand the neutrino interaction with oxygen. This poster will present the status of the detectors, especially focusing on the second H_2O module installation. Their anticipated impact on the precision measurement of CEνNS will also be covered.

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