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Design of the first neutron production experiment using the new TRIUMF UCN beamline

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Our final goal is the measurement of the neutron electric dipole moment with ultracold neutrons (UCN). A new proton beamline for the UCN experiment was recently constructed at TRIUMF. UCNs will be produced by the superfluid He-II UCN source shipped from Japan. For the beam operation, sufficient radiation shields are necessary. We optimized the design of the shields and the layout of the UCN guide pipe to minimize the UCN loss as well as the radiation leakage. This year, we will start the first beam commissioning. In the commissioning, we aim to precisely measure the cold neutron flux since it is important to gain a better understanding of the UCN production. In this presentation, we will report the design of the radiation shields and the first beam commissioning in the TRIUMF UCN beamline.

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