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Cold and thermal neutron flux measurements of the cold neutron source commissioning at TRIUMF

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During the fall of 2016, the ultracold neutron (UCN) collaboration at TRIUMF conducted a number of tests for the cold neutron (CN) source commissioning. Maximizing the resultant CN flux through this source is imperative to producing the world's highest density of UCN. This is necessary in order to increase the sensitivity of the measured neutron electric dipole moment (nEDM) by an order of magnitude over current measurements ($<3e-26$ e.cm) and thus search for new sources of CP-violation to explain the baryon asymmetry of the universe. The commissioning tests included determining the thermal neutron flux outside the source via $^{197}\text{Au}(n,\gamma)^{198}\text{Au}$ process and determining the CN flux inside the source by activating a number of different metals through neutron capture and analyzing the respective flux energies. This talk covers the theory, method, and results of the neutron activation measurements.

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