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Magnetic Fields for Neutron Electric Dipole Moment Measurement at TRIUMF TARANEH ANDALIB, Univ of Manitoba, CANADA-JAPAN UCN COLLABORATION COLLABORATION — The next generation of electric dipole moment (EDM) experiments are a good probe for Charge-Parity (CP) violating sources of physics beyond the Standard Model. The neutron EDM experiment at TRIUMF initially aims to measure the nEDM to 10^{-27} e·cm by using a new superfluid He ultracold neutron (UCN) source and is expected to yield the highest density of UCN in the world. The experiment employs a room temperature Ramsey Resonance technique. One of the leading systematic uncertainties in the experiment is expected to arise from the magnetic fields fluctuations, where pT level stability over hundreds of seconds and ∼nT/m homogeneity is required. The stability of the magnetic field within a magnetically shielded volume is influenced by a number of factors such as the dependence of the internally generated magnetic field on the magnetic permeability μ of the shield material. Some experiments were conducted to measure the temperature dependence of the magnetic permeability of the shield material which is required to adequately design the next generation nEDM experiment at TRIUMF.

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