

The Canadian Astroparticle physics Summer Student Talk (CASST)
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Simulating Magnetic Fields in a Magnetically Shielded Room for a Neutron Electric Dipole Moment Experiment

Friday 18 August 2023 12:15 (15 minutes)

The discovery of a non-zero permanent neutron electric dipole moment (nEDM) could be direct evidence of new physics beyond the Standard Model, due to its CP violating nature. To measure the nEDM, stable magnetic fields are required. The TRIUMF Ultra Cold Advanced Neutron (TUCAN) collaboration is using a 5-layer Magnetically Shielded Room (MSR) to achieve the required level of magnetic field control. Before the MSR is ready for experimental use it must be characterized magnetically. This will be done using precision magnetometers scanned through the region of the EDM experiment on a mapping device. Simulations were performed to determine the precision of the measured magnetic field that can be extracted depending on the coarseness of the scan points. Our initial scans will be along axes with line-of-sight access from outside the MSR, and this limitation was also taken into consideration. I will report the success of these simulations and the impact on the mapping campaign, which will be performed in late 2023.

Topics - Please choose one:

Nuclear

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