

# Challenges of the world-wide experimental search for the electric dipole moment of the neutron



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## Electrical breakdown studies at TRIUMF

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The neutron EDM experiment at TRIUMF aims to apply a dual species co-magnetometer using Xe-129 and Hg-199. Due to a two-photon transition, the Xe pressure in the EDM cell has to be rather high. The High Voltage tests at TRIUMF are investigating the high-voltage stability (around 10-15 kV/cm) in the presence of Xe-129 gas alone and in mixture with Hg-199. The dielectric properties of Xe-129 in the mTorr range of our interest are not known as this pressure region is below the Paschen and above other published data. Ultimately, we are seeking to find the optimum conditions of gas pressure/composition and electrodes separation/geometry and implement our results to the nEDM experiment at (KEK-RCNP/) TRIUMF. The talk will briefly outline the motivation of studying the electrical properties of the Xe-129 gas as this information is essential for conducting a Xe-EDM experiment and employing a dual Xe-129/Hg-199 co-magnetometer in our nEDM experiment. The main focus will be on presenting the current status of the high voltage development work at TRIUMF.

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