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Progress on the high-voltage and EDM cell studies for the TRIUMF neutron EDM experiment

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The currently established best limit on the neutron EDM was obtained by eliminating and investigating main systematic effects using an atomic co-magnetometer inside the neutron storage volume.
The next generation neutron EDM search at TRIUMF aims to introduce 129-Xe as co-magnetometer due to its low neutron absorption cross section. An optical detection scheme of 129-Xe spin precession is available using a transition involving two photons at 256 nm. Ultimately, the goal is an optically probed dual co-magnetometer using both 129-Xe and 199-Hg inside the neutron storage cell to further improve understanding and cancellation of systematic effects. While 199-Hg is an established co-magnetometer in high electric fields xenon has to be studied for its dielectric properties in the pressure range of interest.
The high-voltage test setup at TRIUMF is built to measure the high-voltage breakdown properties of various gas mixtures of 199-Hg/129-Xe at total pressures of 10^{-2} to 10^{-5} mbar. In this talk the current status of the high voltage test setup and EDM cell design will be discussed.

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