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# 61 - First high voltage breakdown measurements in a test setup for the TUCAN 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 pursued by the TUCAN collaboration aims to introduce 129-Xe as an additional co-magnetometer due to its low neutron absorption cross section. An optical detection scheme of 129-Xe spin precession is available using a two-photon transition.
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 limiting 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. A test setup at TRIUMF is in operation to measure the high-voltage breakdown properties of gases at total pressures of 1e-2 to 1e-4 mbar.
First results from high-voltage breakdown tests using various gases will be presented.

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