

Abstract Submitted  
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**High voltage studies of Xe-129 gas for the TRIUMF nEDM experiment** AIKATERINI KATSIKA, TRIUMF, CANADA-JAPAN UCN COLLABORATION COLLABORATION — One of the main sources of systematic uncertainties in neutron electric dipole experiments (nEDM) experiments is related to magnetic field fluctuations. The idea of the atomic co-magnetometer, where polarized atoms are introduced in the same volume with ultra-cold neutrons and measure the precession frequencies of both species, has been used in the past with Hg-199 atoms and led to an improvement of the nEDM upper limit down to  $3.0 \bullet 10^{-26}$  e•cm. For the TRIUMF nEDM experiment, we aim to use Xe-129 atoms expecting to suppress this limit ultimately by two orders of magnitude more due to the smaller neutron absorption cross section and the negative (same to that of the neutron) gyromagnetic ratio that Xe-129 possesses. The precession of the Xe-129 atoms will be probed via a two photon exchange process which requires enough Xe-129 atoms such that the pressure in the cell is orders of mTorr. The talk will present the status of the experimental work carried out at TRIUMF which is focused on exploring the dielectric properties of the Xe-129 in the mTorr region as we require a stable electric field of about 12.5 kV/cm in order to improve the current nEDM upper limit.

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