Contribution ID: **27** Type: **Oral**

High Voltage Generation and SQUID Applications in the SNS nEDM Experiment

Wednesday, 18 October 2017 11:40 (25 minutes)

In the SNS nEDM experiment, liquid helium at around 0.4 Kelvin will fill and surround the measurement cells. In addition to its roles in superthermal production of ultracold neutrons and scintillator, the liquid helium has excellent dielectric strength, and the planned electric field in the cells is ~75 kV/cm. This field requires a voltage applied to the central electrode of ~650 kV. Instead of feeding such a high voltage from an external source into the cryogenic central vessel, a major technical challenge, a much smaller voltage will be fed into the central volume and amplified. In this talk, I will describe current plans for 1) high voltage generation and 2) a device to perform non-contact measurement of the amplified voltage. Also, as a somewhat separate topic, I will describe progress in implementing SQUIDs into the experiment since the last nEDM workshop.

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Funding Agency

US DOE Office of Science, Nuclear Physics

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Session Classification: WeMo2

Track Classification: Magnetic field sensors (atomic co-magnetometry, AQUIDS, fluxgate)