

Abstract Submitted
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Electrodes for a Cryogenic Cavallo Apparatus¹ MARIE BLATNIK, Caltech, NEDM@SNS COLLABORATION — The nEDM@SNS experiment at Oak Ridge National Labs Spallation Neutron Source will measure the neutron electric dipole moment with a sensitivity $< 3 \times 10^{-28}$. The measurement cell containing ultracold neutrons will have an electric field of 75 kV/cm produced by a 650 kV electrode. Because the cell must be operated in the few hundred millikelvin range, a traditional 650 kV feedthrough is impractical. Instead, an electrostatic induction machine called a Cavallo Multiplier will multiply a nominal feedthrough voltage into the target high voltage. The Cavallo electrodes were designed based on an empirical hyperbolic tangent envelope, and simulated using COMSOL, a finite element analysis program. The geometric gain, electric field, and spark analysis will be presented.

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