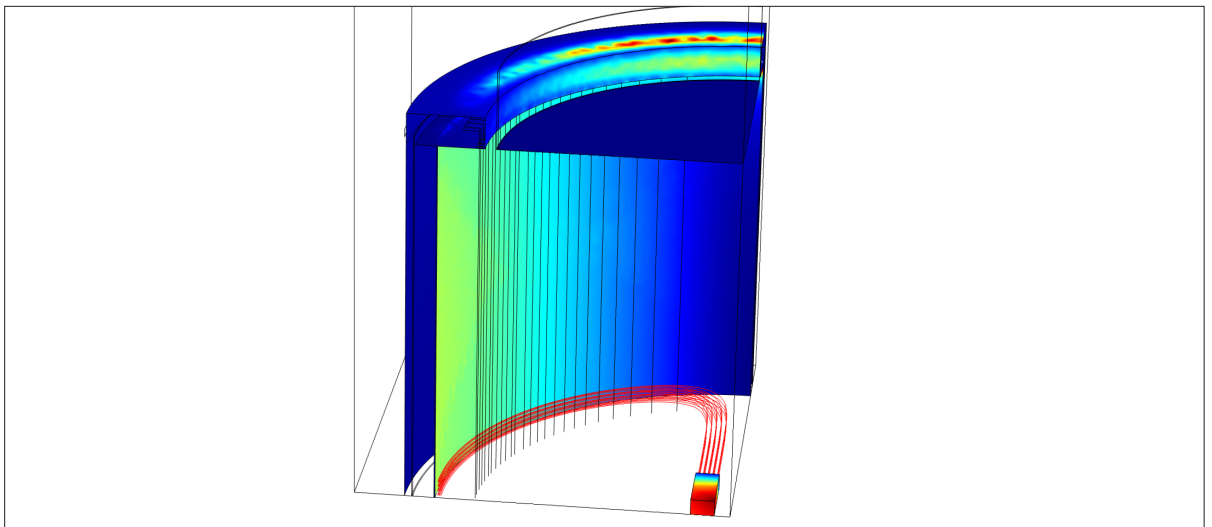


Christopher Swank
CalTech

February 3, 2022 at 1:00 p.m. on Zoom
Advanced Critical Spin Dressing



The neutron electric dipole moment (nEDM) experiment at the Spallation Neutron Source (SNS) will measure the nEDM via interaction with Helium-3. Ultimate sensitivity will be reached in that apparatus by using the critical spin dressing technique. Critical spin dressing is the application of an off-resonant oscillatory field that dresses the neutron and Helium-3 spins to have the same effective Larmor precession. Advanced critical spin dressing techniques are in development that can provide high sensitivity measurements of magnetic field gradients with a large dynamic range. Additionally, this measurement technique will distinguish between gradients responsible for limiting the coherence time versus gradients that generate the geometric phase, a linear-in-E frequency shift. Furthermore for EDM measurements, rotation of the electric field onto the dressing axis can eliminate a majority of the systematic effects from magnetic field fluctuations, while maintaining full sensitivity. A research program has been proposed to develop these techniques at the systematic and operational studies apparatus in the PULSTAR reactor at NCSU.

Host: Mike Jewell

Connection info: <https://yale.zoom.us/j/98300235819>

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