

Abstract Submitted
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Prospects for using $\text{Gd}_3\text{Fe}_5\text{O}_{12}$ ferrite ceramics in searches for the electron permanent electric dipole moment and violation of local Lorentz invariance ALEXANDER SUSHKOV, STEPHEN ECKEL, STEVE LAMORE-AUX, Yale University — Gadolinium iron garnet ($\text{Gd}_3\text{Fe}_5\text{O}_{12}$) ferrite ceramic maintains its high magnetic susceptibility down to cryogenic temperatures: our measurements at 4 K give $\mu = 75$. This gives rise to an enhancement of material magnetization that would be induced by effects such as violation of local Lorentz invariance, or orientation of permanent electric dipole moments caused by an applied electric field. Such magnetization can be detected with DC SQUID magnetometers. Magnetic noise measurements with SQUIDS at 4 K indicate that the EDM sensitivity on the level of $10^{-28} e \cdot \text{cm}$ is achievable after ten days of averaging.

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