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Novel Scheme to Measure the Electric Dipole Moment of the Electron Using PbO YONG JIANG, Yale University, SARAH BICKMAN TEAM, DAVID DEMILLE TEAM, PAUL HAMILTON TEAM — The unveiling of an electron electric dipole moment (EDM d_e) within the next few orders of magnitude beyond the current limit of $|d_e| < 1.6 \times 10^{-27}$ e-cm would be of great interest in the fundamental physics as an evidence for physics beyond the standard model. An experiment to look for EDM of the electron using the metastable a(1) ($^3\Sigma$) state of PbO molecule is being implemented. High level of sensitivity would be achievable because of the extreme polarizability of diatomic molecules with a vapor cell. Here we would explore a novel scheme of signal detection using microwave absorption. Based on the nowadays available technology and experiment setup, we estimated microwave absorption cross-section, signal size and noise feature of the system. We also report the state preparation result using microwave technique as demonstration.

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