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Dressed Spin of Helium-3 in the Cell at Room Temperature[1]
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The dressed spin effect refers to the modification of effective magnetic moment of a particle when an oscillatory magnetic field is applied perpendicular to a constant magnetic field. A new neutron electric dipole moment (EDM) experiment plans to utilize this effect to modify the precession frequencies of polarized ^{3}He and polarized ultracold neutrons stored in a superfluid helium cell. This dressed spin technique, proposed by Golub and Lamoreaux, is expected to reduce the systematic uncertainty of the EDM experiment. We have performed measurements using polarized ^{3}He stored in a cell at room temperature to study the dressed spin effect. The ^{3}He is polarized using the metastability spin exchange method, and the precession frequency of ^{3}He was measured using pickup coils. The dressed spin effect was clearly observed for a variety of dressing field configurations. Results from this measurement will be presented and compared with theoretical calculations. Implications of this study on the neutron EDM experiment will also be discussed.

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