

Abstract Submitted
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Optically pumped helium-3 NMR in a Penning trap system XI-ANG FEI, Central Institute for Precision Study — The magnetic moment ratio of the shielded helion to the nuclear magneton can be measured by comparing the helium-3 NMR frequencies with the proton cyclotron frequencies in a Penning trap system. Cyclotron frequencies of other ions and electrons may also be used for comparison. Important physical constants could be obtained by using available (for example, the proton- to-electron mass ratio, the electron g-factor, and the magnetic moment ratio of the shielded helion to the shielded proton) and proposed (g-factor of the proton and antiproton) high precision NMR and Penning trap measurements. The goal of this experiment is to determine the shielded proton magnetic moment in Bohr magnetons, the diamagnetic shielding correction for protons in water, and other magnetic moment ratios involving electrons and protons to the 5 ppb level of accuracy with possible improvements to 1 ppb level.

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