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Measurement of the anapole moment of ^{133}Cs from Parity Non-conserving (PNC) interaction in hyperfine ground states JUNGU CHOI, GEORGE TOH, DANIEL ELLIOTT, Purdue Univ, ELLIOTT'S LAB TEAM — We discuss initial work towards a measurement of the anapole moment of ^{133}Cs from a parity nonconserving (PNC) interaction between the hyperfine ground states. The result of the previous measurement of this anapole moment by the Boulder group, carried out on the $6S_{1/2} \rightarrow 7S_{1/2}$ transition, was much larger than expected, and is at odds with various measurements of scattering cross sections. In an effort to address this deviation, we propose to observe the PNC effect on the hyperfine ground state $6S_{1/2}F = 3 \rightarrow 6S_{1/2}F = 4$ transition by exciting the microwave and two-photon Raman transitions, and observing the interference between these interactions. The benefits of this proposed measurement include the well-known microwave transition frequency (atomic clock frequency), far less sensitivity to the stray field effects, and a high excitation rate by the Raman transition.

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