

Abstract Submitted
for the DAMOP08 Meeting of
The American Physical Society

Observed Suppression of an E1 Allowed Transition in ^3He ¹

MICHAEL BISHOF, IBRAHIM SULAI, ZHENG-TIAN LU, Physics Division, Argonne National Lab and EFI, University of Chicago, KEVIN BAILEY, PETER MUELLER, TOM O'CONNOR, Physics Division, Argonne National Lab, GORDON W.F. DRAKE, QIXUE WU, University of Windsor — Many instances occur when hyperfine mixing enhances the strength of forbidden transitions, such as ground state to $^3\text{P}_0$ transitions in odd isotope alkaline earths. However, strong suppression of an allowed transition due to hyperfine mixing is rare. We have observed strong suppression of the E1 allowed 2^3S_1 F=3/2 to 3^3P_1 F=3/2 transition in ^3He . In a theoretical model developed by Drake et al., this “missing” transition is attributed to hyperfine mixing of the 3^3P_1 F=3/2 and 3^3P_2 F=3/2 states. The theoretical model also predicts the magnetic field dependence of transition strength for the ten transitions between magnetic sublevels of 2^3S_1 F=3/2 and 3^3P_1 F=3/2. We present measurements of this dependence using laser spectroscopy at 389nm on a collimated beam of metastable ^3He atoms.

¹This work is supported by DOE, Office of Nuclear Physics, under contract no. DE-AC02-06CH11357.

Michael Bishof
Physics Division, Argonne National Lab and EFI, University of Chicago

Date submitted: 04 Feb 2008

Electronic form version 1.4