Precision Hyperfine Structure of $2\,{}^3$**P State of** ^{3}**He with External Magnetic**[1] QIXUE WU, G.W.F. DRAKE, University of Windsor — The theory of the Zeeman effect can be used to extrapolate precise measurements for the fine structure or the hyperfine structure to zero-field strength. In the present work, the hyperfine structure of $2\,{}^3$P state of ^{3}He with external magnetic fields is precisely calculated. The values of the fields for 32 crossings and five anticrossings of the magnetic sublevels are theoretically predicted for magnetic field strengths up to 1 Tesla. The results are compared with experimental work. We include the linear terms, diamagnetic terms, and the α^2 relativistic correction terms in the Zeeman Hamiltonian. All related matrix elements are calculated with high accuracy by the use of double basis set Hylleraas type variational wave functions[1,2].

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[2] Q. Wu and G.W.F. Drake, J. Phys. B **40**, 393 (2007).

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