Microwave spectroscopy of high-L Rydberg states of nickel\textsuperscript{1}  
MARK D. LINDSAY\textsuperscript{2}, JULIE A. KEELE, SHANNON L. WOODS, STEPHEN R. LUNDEEN, Colorado State University — High-L non-penetrating Rydberg levels of nickel display a fine structure pattern consisting of six levels for each value of $L$. This pattern was studied recently with the optical RESIS technique, determining initial values of the quadrupole moment and polarizabilities of the $^{2}D_{5/2}$ ground state of Ni$^{+}$ [1]. Measurements are now in progress using the microwave RESIS technique [2], which promises much more precise measurements of the fine structure and of the related core properties, including the permanent hexadecapole moment.


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