

Abstract Submitted
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Properties of Ni⁺ from microwave spectroscopy of n=9 Rydberg levels of Nickel¹ SHANNON WOODS, JULIE KEELE, CHRIS SMITH, STEPHEN LUNDEEN, Colorado State University — The microwave/RESIS method was used to determine the relative positions of 15 of the n=9 Rydberg levels of Nickel with $L \geq 6$. Because the ground state of the Ni⁺ ion is a $^2D_{5/2}$ level, each Rydberg level (n,L) splits into six eigenstates whose relative positions are determined by long-range e-Ni⁺ interactions present in addition to the dominant Coulomb interaction. A previous study with the optical RESIS method determined these positions with precision of +/- 30 MHz [1]. Using the microwave/RESIS method improves that precision by a factor of 300, and leads to much improved determinations of the Ni+ properties that control the long-range interactions.

[1] Julie A. Keele, Shannon L. Woods, M.E. Hanni, and S.R. Lundeen Phys. Rev. 81, 022506 (2010)

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