

Abstract Submitted
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Dipole and Quadrupole Polarizabilities of Ni II and Parameters of an Effective Potential for Ni I Rydberg States¹ MARWA ABDALMONEAM, DONALD BECK, Michigan Technological University — The Relativistic Configuration Interaction Method has been used to evaluate the dipole and quadrupole polarizabilities of Ni II with the results (for $3d^9 \ ^2D_{3/2}$) of 7.686 au and (for $3d^9 \ ^2D_{5/2}$) 62.94 au respectively. The experimental value for the latter is estimated [2] to be 55(8) au. Our result for the non-adiabatic scalar dipole polarizability ($^2D_{5/2}$) is 9.243 au (experimental estimate [2] 8.9(1.2) au) and for the off-diagonal tensor dipole polarizability ($^2D_{5/2}$) 0.220 au (experimental estimate [2] -0.04 au). Significant cancelations occur here [1].

[1] Dipole and Quadrupole Polarizabilities of Ni II and Parameters of an Effective Potential for Ni I Rydberg States, J.Phys.B., submitted for publication.

[2] S L Woods and S R Lundeen, Phys. Rev. A85, 042505 (2012).

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