

Abstract Submitted
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R-MATRIX II Calculations for Electron Collisions with Ni II¹

ANIL PRADHAN, JUSTIN OELGOETZ, SULTANA NAHAR, The Ohio State U, V. BURKE, P. BURKE, C. NOBLE, QUB, Daresbury Lab — The R-matrix II approach is especially designed to generate configuration-interaction expansions in a systematic manner, taking account of correlations due to one-, two-, and three-electron excitations. The program package, PRMAT, is used to carry out heretofore the most elaborate electron scattering calculations for the astrophysically important ions Ni II and Fe II. Over 100 LS terms are included in the eigenfunction expansions, which yield good agreement with spectroscopically observed term energies. Large CI expansions are particularly important for accurate treatment of resonances that dominate the near-threshold behavior of collision strengths. Results are presented for a number of transitions and compared with earlier works.

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