

Abstract Submitted
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Benchmark calculations for electron collisions with FeII¹ OLEG ZATSARINNY, KLAUS BARTSCHAT, Drake University — We have applied the *B*-spline *R*-matrix method [1] to study electron collisions with Fe⁺ over an energy range from threshold to 10 Ry. A major challenge for this astrophysically important collision system is the very complex target structure, with a strong term-dependence in the individual orbitals. Using a multi-configuration Hartree-Fock method with non-orthogonal orbitals, we generated a target description of unprecedented accuracy in collision calculations. Our results for individual cross sections and effective collision strengths are in qualitative agreement with the predictions by Ramsbottom *et al.* [2]. A few significant discrepancies are found in the low-energy regime, which is dominated by resonance structures. [1] O. Zatsarinny and C. Froese Fischer, *J. Phys. B* **33**, 313 (2000). [2] C.A. Ramsbottom, C.J. Noble, V.M. Burke, M.P. Scott and P.G. Burke, *J. Phys. B* **37**, 3609 (2004).

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