

Abstract Submitted
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Benchmark calculations for electron collisions with mercury¹

OLEG ZATSARINNY, KLAUS BARTSCHAT, Drake University — We have applied our recently developed fully relativistic Dirac B -spline R -matrix (DBSR) code [1] to calculate electron scattering from mercury atoms. Results from a 36-state close-coupling calculation [2] are compared with numerous experimental benchmark data for angle-integrated and angle-differential cross sections, as well as spin-asymmetry, spin-polarization, and electron-impact coherence parameters. We generally obtain much better agreement with experiment than previous distorted-wave and close-coupling attempts. The results are believed to be particularly accurate in the low-energy (below 10 eV) near-threshold regime and hence represent a significant improvement over frequently used older datasets for modeling of low-temperature plasmas containing mercury.

[1] O. Zatsarinny and K. Bartschat, Phys. Rev. A **77**, 062701 (2008).

[2] O. Zatsarinny and K. Bartschat, Phys. Rev. A **79**, 042713 (2009).

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