

Abstract Submitted
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Elastic electron scattering from atomic and molecular iodine¹

K. BARTSCHAT, O. ZATSARINNY, Drake University, F. BLANCO, Universidad Complutense de Madrid, G. GARCIA, Instituto de Fisica Fundamental (Madrid) — We report calculations for elastic electron scattering from atomic and molecular iodine. An accurate knowledge of these cross sections is one of the key ingredients to indirectly infer the cross section for electron scattering from the CF₃ radical, after measuring the “mixed beam” cross section that results from the pyrolysis of a CF₃I parent molecule into species such as CF₃, I and I₂, whose relative abundance is known from a TOFMS. The calculations for e–I scattering were performed with the fully relativistic Dirac *B*-spline *R*-matrix (DBSR) method [1]. We closely coupled the two fine-structure states (5s²5p⁵)²P_{3/2,1/2} and seven pseudo-states that were constructed to ensure the correct dipole polarizability of these states. The calculations for e–I₂ scattering were performed with a phenomenological model potential [2]. Their reliability was tested by comparing the predictions of the approach for the atomic target with the DBSR results.

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

[2] F. Blanco and G. García, Phys. Rev. A **67** (2003) 022701.

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