Low-energy electron and positron scattering by *para*-difluorobenzene

Luiz Vitorino dos Santos Dalagnol[1], Giseli Maria Moreira[2], Alessandra Souza Barbosa[1] and Márcio Henrique Franco Bettega[1]

[1]*Departamento de Física, Universidade Federal do Paraná, Caixa Postal 19044, 81531-980 Curitiba, Paraná, Brazil*

[2]*Departamento de Física, Universidade Estadual do Centro-Oeste, 85040-167 Guarapuava, Paraná, Brazil*

In this work we employed the Schwinger multichannel method in calculations of the elastic integral and differential cross sections for collisions of low-energy electrons [1,2] and positrons [3] by *para*-difluorobenzene (1,4-$C_6H_4F_2$) molecule. It has biological relevance, is used as a dopant to ionize the soluble organic species present in coal lignite (mineral), and is also used in Fluorine-19 Nuclear Magnetic Resonance Spectroscopy [4]. The present calculations involving electron scattering have been computed at both static-exchange and static-exchange plus polarization levels of approximation. Our results indicate the presence of three resonances of π^*-character in the low-energy region and a fourth resonance, of σ^*-character, at higher energy. With respect to the positron scattering, the calculations were conducted in the static plus polarization approximation at three different polarization levels. The present calculated electron and positron cross sections show a reasonable agreement with those total cross sections measured by Makochekanwa *et al.* [5]. It is also important to highlight that our computed integral cross-section for electron scattering indicates the presence of a Ramsauer-Townsend minimum, while the integral cross-section for positron scattering indicates the presence of a virtual state.

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