

Abstract Submitted
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Resonance scattering of positronium by N₂¹ ROBYN WILDE, Oregon Institute of Technology, ILYA FABRIKANT, University of Nebraska-Lincoln — Since the discovery [1] of the similarity between electron and positronium (Ps) scattering by atoms and molecules, much theoretical effort has been directed to explain this intriguing observation. A particularly interesting phenomenon is the presence of a resonance in Ps scattering by nitrogen molecules [2] which looks similar to the Π_g resonance in electron scattering by the same target if cross sections for both processes are plotted as functions of the projectile velocity. For correct treatment of Ps-molecule scattering incorporation of the exchange interaction and short-range correlations is of a paramount importance. In the present work we have used a free-electron-gas model to describe these interactions in collisions of Ps with the N₂ molecule. The results agree reasonably well with the experiment, but the position of the resonance is somewhat shifted towards lower energies, probably due to the fixed-nuclei approximation employed in the calculations. ¹ S. J. Brawley *et al.*, *Science* **330**, 789 (2010). ² M. Shipman *et al.*, *Phys. Rev. A* **95**, 032704 (2017).

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Ilya Fabrikant
University of Nebraska-Lincoln

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