

A DECADE-OLD MYSTERY DECODED: THE ENERGY-SHARING ASYMMETRY IN IONIZATION BY POSITRON IMPACT

R. O. Barrachina¹, Juan Fiol¹ and Pablo Macri²

¹ Centro Atómico Bariloche and Instituto Balseiro, Comisión Nacional de Energía Atómica and Universidad Nacional de Cuyo, R8402AGP S. C. de Bariloche, Río Negro, Argentina

² Departamento de Física, FCEyN, Universidad Nacional de Mar del Plata, Deán Funes 3350, 7600 Mar del Plata, Argentina

One decade ago, an experimental study [1] of the positron impact ionization on H₂ showed the occurrence of a capture-to-the-continuum cusp, a well-known phenomenon in ion-atom ionization collisions that had been predicted also for positrons over a decade earlier [2]. This study also unveiled a very surprising result, an unexpected strong asymmetry where the electrons got much less energy than the positrons in the final state. Further coincidental measurements of the electron and positron energy and angle distributions in a collinear geometry confirmed this early finding [3,4]. This phenomenon was far more intense than in ion-atom collisions, and had been unforeseen by quantum mechanical theories [5,6], even though a latter classical trajectory Monte-Carlo (CTMC) calculation seemed to corroborate it [7]. Since then, different explanations had been tried out, as for instance a competition with Ps formation [4] and annihilation [8] channels. In this communication we propose a different mechanism based on a dynamical orientation of the electron-positron continuum dimmer. The corresponding calculations are shown to be in full agreement with the available experimental and CTMC results. Finally, a suitable method to experimentally corroborate this assertion is presented.

This work was partially supported by Agencia Nacional de Promoción Científica

y Tecnológica (Grants 03-12567 and 03-20548), Consejo Nacional de Investigaciones Científicas y Técnicas (Grant PIP 5595) and Universidad Nacional de Cuyo (Grant 06/C229). The authors are also members of the Consejo Nacional de Investigaciones Científicas y Técnicas, Argentina.

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Researchers at Pacific Northwest National Laboratory (PNNL) have solved a mystery for a chemical reaction essential for fuel and fertilizer production. The so-called water-gas shift reaction forms hydrogen fuel and carbon dioxide from carbon monoxide and steam. A team solves decade-old mystery in chemical transformations. by Genoa Blankenship, Environmental Molecular Sciences Laboratory. Ferris wheel depicts the carboxyl catalytic cycle. Credit: Cortland Johnson. Researchers at Pacific Northwest National Laboratory (PNNL) have solved a mystery for a chemical reaction essential for fuel and fertilizer production. The so-called water-gas shift reaction forms hydrogen fuel and carbon dioxide from carbon monoxide and steam. Ionization cross-sections for positron collisions with N₂. The European Physical Journal D, Vol. 68, Issue. 3. In this chapter, we consider experimental methods employed to investigate positron and positronium impact ionization and fragmentation in collision with atoms and molecules, and associated results. In the case of positrons, an extensive database now exists of integral cross sections for the inert atoms (see, e.g., [5]), less so for molecules (see, e.g., [6]); differential data remain sparse (e.g., [5]). Our focus will be on the latter two topics as well as studies with positronium projectiles. Related content. Photons emission and charge-exchange contributions to the energy loss of swift heavy ions in dense matter. By decoding this mystery, the researchers are helping unlock batteries with greater energy capacity. That could mean smaller, more powerful batteries able to rapidly deliver charges for everything from smartphones to electric vehicles. University of Texas at Austin. "Decades-old mystery of lithium-ion battery storage solved." ScienceDaily. ScienceDaily, 2 September 2020. . University of Texas at Austin. (2020, September 2). Decades-old mystery of lithium-ion battery storage solved. ScienceDaily. ScienceDaily shares links with sites in the TrendMD network and earns revenue from third-party advertisers, where indicated. Print Email Share. advertisement.

Since its discovery in 1912, the 15th century Voynich Manuscript has been a mystery and a cult phenomenon. Full of handwriting in an unknown language or code, the book is heavily illustrated with weird pictures of alien plants, naked women, strange objects, and zodiac symbols. During the Middle Ages, it was very common for scribes to reproduce older texts to preserve the knowledge in them. There were no formal rules about copyright and authorship, and indeed books were extremely rare, so nobody complained. The Voynich Manuscript has been reliably dated to mere decades before the invention of the printing press, so it's likely that its peculiar blend of plagiarism and curation was a dying format. For decades, that same small codex – a little over 20cm by 16cm – has successfully confounded some of the world's most brilliant minds with its unreadable language. It is called the Voynich Manuscript, and the mystery swirling around its creation, its backstory and, above all, its beguiling contents surely make it one of the greatest unsolved riddles in literary history. Leaf through the 240 richly illustrated vellum pages of the manuscript and you'll soon understand why it has enticed so many people for so many years. Its pages are adorned with an array of fantastical illustrations – ones you

Misthalin Mystery is a standalone quest, being the 130th quest in Old School RuneScape. It is the second quest to be made specifically for Old School RuneScape. After escaping from a house party in a spooky manor on a faraway island, Abigale seeks help for her injured boyfriend Hewey after being attacked by an unknown figure. Speak to Abigale, who will ask for the player's help after being attacked by an unknown figure on a nearby island. Board the rowboat south of them. Head through the gate