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

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One decade ago, an experimental study [1] of the positron impact ionization on H$_2$ 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.

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References

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.

Team solves decade-old mystery in chemical transformations. by Genoa Blankenship, Environmental Molecular Sciences Laboratory.

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 Mithralin 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.