Abstract Submitted
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Implosive Interatomic Coulombic decay in the simplest molecular anion[1] CHRIS H. GREENE, JESUS PEREZ-RIOS, Department of Physics and Astronomy, Purdue University, West Lafayette, IN 47907, LYUDMILA SLIPCHENKO, Department of Chemistry, Purdue University, West Lafayette, IN 47907 — Interatomic Coulombic decay (ICD) has been extensively studied in different systems: from diatomic systems such as He_2 up to more complex chemical systems with interest in biochemistry. Independently of the size and complexity of the system, the ICD process proposed involves the emission of an electron through exchange of a virtual photon. The present theoretical study investigates the ICD process in the helium hydride anion, which involves two final product states that can be produced through a Coulomb implosion following high energy ejection of a He 1s electron accompanied by excitation to $He^+(n = 2)$. One of the subsequent decay channels is associated with the usual emission of a single electron, to produce a stable molecule: HeH^+, which can compete with the usual dissociated final state of the system. The second channel involves the emission of two electrons, leading to the usual Coulomb explosion of the final product ions $He^+(1s) + H+$. In addition, the process of formation of the helium hydride anion is analyzed in terms of the existing technology of ionic molecular beams and buffer gas cooling techniques.

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