

Abstract Submitted
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Effects of Electric Fields on Rydberg-Rydberg Long-Range Interaction and Formation of Stable Macrodimers Bound States¹ NOLAN SAMBOY, Department of Physics, University of Connecticut, 2152 Hillside Rd., Storrs CT 06269-3046, USA, JOVICA STANOJEVIC, Max Planck Institute for the Physics of Complex Systems, Nöthnitzer Str. 38, 01187, Dresden, Germany, ROBIN CÔTÉ, Department of Physics, University of Connecticut, 2152 Hillside Rd., Storrs CT 06269-3046, USA — We study long-range interactions between two Rydberg atoms under the effects of a small electric field. We show that long-range potential wells are relatively unaffected by the presence of the electric field (i.e. they are stable when compared to their zero-field counterparts). We also show that particular wells can sustain several bound states, with lifetimes limited by the lifetimes of the Rydberg atoms making them. We calculate properties of these molecular bound states and present theoretical photoassociation rate coefficients for the formation of these macrodimers starting from various atomic Rydberg states.

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Nolan Samboy
Department of Physics, University of Connecticut,
2152 Hillside Rd., Storrs CT 06269-3046, USA

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