

Abstract Submitted
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Tunable Three Body Loss in a Rydberg EIT medium ANDREW HACHTEL, PRZEMEK BIENIAS, ALEXANDER CRADDOCK, University of Maryland - College Park, ELIZABETH GOLDSCHMIDT, Army Research Laboratory, MICHAEL GULLANS, Princeton University, DALIA ORNELAS, YIDAN WANG, ALEXEY GORSHKOV, J.V. PORTO, STEVE ROLSTON, University of Maryland - College Park — The combination of atomic Rydberg interactions with electromagnetically induced transparency (EIT) is a promising candidate for a wide range of applications for quantum optics, quantum information protocols, and the study of many-body physics. These systems provide a novel platform to study few-body physics where the dimensionality, mass, strength, and sign of the interactions are widely controllable and tunable, as has been demonstrated in recent experiments observing the formation of two- and three-photon bound states. In this work, we present preliminary experimental results demonstrating three-body loss in the dispersive regime of Rydberg-EIT medium. Additionally, we show that the magnitude of this loss can be tuned with experimental parameters.

Andrew Hachtel
University of Maryland - College Park

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