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Heavy-Rydberg ion-pair formation in Rydberg atom collisions: Probing dissociative electron attachment[1] MICHAEL KELLEY, SITTI BUATHONG, F. BARRY DUNNING, Department of Physics and Astronomy, Rice University — While electron transfer in Rydberg atom collisions with attaching targets forms a valuable technique with which to create heavy-Rydberg ion pairs to examine their properties, we demonstrate here that measurements of their velocity distributions can also provide insights into the behavior of the excited intermediates formed through initial electron transfer. The experimental results are analyzed with the aid of a Monte Carlo collision code that models the details of electron transfer reactions. Results for a variety of targets are presented that demonstrate the use of this approach to examine the dynamics of dissociative electron attachment, the lifetimes of the intermediates created, and the channels by which they decay.

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