

Abstract Submitted  
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**Studying dissociative electron attachment through formation of heavy-Rydberg ion-pair states\*** MICHAEL KELLEY, SITTI BUATHONG, F. BARRY DUNNING, Rice University — Following dissociative electron transfer in collisions between Rydberg atoms and electron-attaching targets, it is possible for the resulting pair of ions to remain electrostatically bound, forming heavy-Rydberg ion-pair states. Precise measurement of the velocity distributions of such ion-pair states provides information concerning the dissociation dynamics of the excited intermediates initially created by electron transfer. Here, electric-field-induced dissociation is used to detect the product ion pairs and observe their velocity distributions. These distributions are analyzed with the aid of a Monte Carlo collision code that models the electron transfer. Measurements with a number of different target species show that through this analysis, dissociation energetics, the branching ratios into different dissociation products, and the lifetimes of the excited intermediates can be examined. \*Research supported by the Robert A. Welch Foundation.

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