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Abstract for an Invited Paper
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Rydberg molecules, electron collisions, and associative ionization

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A mechanism for associative ionization in the reaction between a Rb(nl) Rydberg atom and a ground state Rb atom that forms Rb_2^+ will be discussed, along with experimental evidence from the Stuttgart group. This talk will also consider the low energy dissociative recombination reaction in which a colliding electron can destroy a simple diatomic positive ion with surprising efficiency. Time permitting, progress in our studies of negative ion photodetachment processes occurring in the vicinity of Rydberg states with huge positive or negative polarizability will also be addressed.