

Abstract Submitted  
for the DAMOP12 Meeting of  
The American Physical Society

**Breaking a tetrahedral molecular ion with electrons: Study of  $\text{NH}_4^+$** <sup>1</sup> NICOLAS DOUGUET, University of California Davis, VIATCHESLAV KOKOOLINE, University of Central Florida, ANN OREL, University of California Davis — We apply a general theoretical model to study the dissociative recombination of the polyatomic ion  $\text{NH}_4^+$ . The high symmetry of the molecule, represented by the tetrahedral group, leads to complex vibronic couplings responsible for dissociative recombination. By applying multi-channel quantum defect theory and using symmetry considerations, we treat the doubly and triply degenerate modes and electronic states of  $\text{NH}_4^+$  to calculate a theoretical cross section which agrees well with existing experimental data. This represents, to our knowledge, the first DR study for a molecular ion with triply degenerate electronic states and normal modes.

<sup>1</sup>This work is supported by the DOE Office of Basic Energy Science and the National Science Foundation, Grant No's PHY-08-55092 and PHY-08-55622.

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Date submitted: 27 Jan 2012

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