

## MOLECULAR ION SPECTROSCOPY OF $\text{BaCl}^+$

STEVEN J. SCHOWALTER, KUANG CHEN, WADE G. RELLERGERT, SCOTT T. SULLIVAN, AND  
ERIC R. HUDSON, *Department of Physics and Astronomy, University of California, Los Angeles, California  
90095, USA.*

We discuss our efforts to perform high-resolution spectroscopy of the  $\text{BaCl}^+$  ion, an exciting candidate for ultracold molecular ion studies. This work details our search for a predicted predissociation channel between the first-excited  $B^1\Sigma$  and  $A^1\Pi$  states. It is expected that the rovibrational resolution afforded by predissociation spectroscopy will allow us to efficiently measure molecular-ion rovibrational temperatures. This is a crucial step in confirming our method to produce ultracold molecular ions via sympathetic collisions with a  $^{40}\text{Ca}$  MOT. To observe the predissociation of trapped  $\text{BaCl}^+$ , we detect slight increases in fragment  $\text{Ba}^+$  with a novel time-of-flight device using radial extraction from a linear quadrupole trap.