

Abstract Submitted
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Cold K-Ca⁺ interaction studies in an ion-atom hybrid trap¹

JYOTHI SARALADEVI, KISRA EGODAPITIYA, GANG SHU, Department of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA30332, BICHEN ZHANG, Department of Physics, Georgia Institute of Technology, Atlanta, GA30332, JOHN CONDOLUCI, Department of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA30332, PIERO CHIAPPINA, DI LAO, ZHUBING JIA, Department of Physics, Georgia Institute of Technology, Atlanta, GA30332, ROB CLARK, Department of Physics, The Citadel, Charleston, SC 29409, KEN BROWN, Department of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA30332 — Mixtures of cooled and trapped ions and atoms enable study of cold collisions including elastic collisions, charge exchange interactions and molecular ion formation. To facilitate these studies, we have developed an apparatus comprising a spatially overlapped ion trap (linear Paul trap) and an atom trap (magneto optical trap) [1]. The apparatus is integrated with a high resolution time of flight mass spectrometer for identifying the reaction products. Initial studies on interactions between cold Calcium (Ca⁺) ions and Potassium (K) atoms will be presented. The prospects for rotational cooling of molecular ions by interaction with ultracold Potassium atoms will be discussed. [1] Wade G. Rellergert, Scott T. Sullivan, Steven J. Schowalter, Svetlana Kotochigova, Kuang Chen & Eric R. Hudson, Nature 495, 490 (2013)

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Jyothi Saraladevi
Georgia Institute of Technology

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