

Abstract Submitted
for the DAMOP20 Meeting of
The American Physical Society

Towards sympathetic rotational cooling of CaH^+ in a hybrid atom-ion trap ERIC PRETZSCH, JYOTHI SARALADEVI, LU QI, EVAN REED, KENNETH BROWN, Duke University — A hybrid ion and magneto-optical trap is proposed to be a good environment for achieving the sympathetic cooling of molecular ions. We have previously shown that simultaneous trapping and spatial overlap of laser cooled Ca^+ with CaH^+ allows for sympathetic cooling of CaH^+ . Coulomb interactions with calcium ions cool the translational motion of the molecular ion, and we expect the addition of interactions with potassium cool the internal states. We have observed charge exchange interactions between the coolants (Ca^+ and K) which can be minimized through state manipulation of the calcium ions. We present results of charge exchange reactions between trapped Ca^+ and K and our plans for the sympathetic rotational cooling of CaH^+ .

Eric Pretzsch
Duke University

Date submitted: 31 Jan 2020

Electronic form version 1.4