

Abstract Submitted
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Trapping and Sympathetic Cooling of Boron Hydride Ions RENE RUGANGO, Georgia Inst of Tech, MUDIT SINHAL, India Institute of Technology at Kharagpur, GANG SHU, KENNETH BROWN, Georgia Inst of Tech — We demonstrate the trapping and sympathetic cooling of BH^+ ions in a Coulomb crystal of laser-cooled Ca^+ , which we non-destructively confirm by resonantly exciting the secular motion of the molecular ion. The BH^+ ions are loaded by ablating boron in presence of H_2 which also produces various molecular ions of the form B_xH_y^+ as side products. This mixture of sympathetically cooled molecular ions can then be used to perform molecular spectroscopy. Our goal is to control the internal degrees of freedom of BH^+ as a first step towards the direct Doppler cooling of a molecular ion.

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