

Abstract Submitted
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Towards laser cooling and trapping of barium monohydride REES MCNALLY, GEOFFREY IWATA, Columbia University, MARCO TARALLO, Istituto Nazionale di Ricerca Metrologica, TANYA ZELEVINSKY, Columbia University — We report progress towards the laser cooling of diatomic BaH, demonstrating operation of a cryogenic buffer gas beam source with a brightness of $10^6 - 10^7$ molecules in the trapping region per ablation pulse, the brightest hydride beam to our knowledge. This source has enabled studies of the transitions and properties of BaH relevant to laser cooling, and we show preliminary results towards optical manipulation. Looking forward, plans for chirped molecular slowing on the A Σ excited state, followed by magneto-optical trapping on the B Σ excited state will be presented. Finally, we discuss the feasibility of photo-dissociation of ultracold BaH as a source of dilute ultracold hydrogen suitable for precision spectroscopy, a unique application for the monohydrides.

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