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Toward laser cooling and trapping lanthanum ions[1] STEVEN OLMSCHENK, PATRICK BANNER, JESSIE HANKES, AMANDA NELSON, Denison University — Trapped atomic ions are a leading candidate for applications in quantum information. For scalability and applications in quantum communication, it would be advantageous to interface ions with telecom light. We present progress toward laser cooling doubly-ionized lanthanum, which should require only infrared, telecom-compatible light. Since the hyperfine structure of this ion has not been measured, we are using optogalavanic spectroscopy in a hollow cathode lamp to measure the hyperfine spectrum of transitions in lanthanum. Using laser ablation to directly produce ions from a solid target, we laser cool and trap barium ions, and explore extending this technique to lanthanum ions.

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