

Abstract Submitted
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La Saturated Absorption Spectroscopy for Applications in Quantum Information¹ PATRICK BECKER, LIZ DONOGHUE, KRISTINA DUNGAN, JACKIE LIU, STEVEN OLMSCHENK, Denison University — Quantum information may revolutionize computation and communication by utilizing quantum systems based on matter quantum bits and entangled light. Ions are excellent candidates for quantum bits as they can be well-isolated from unwanted external influences by trapping and laser cooling. Doubly-ionized lanthanum in particular shows promise for use in quantum information as it has infrared transitions in the telecom band, with low attenuation in standard optical fiber, potentially allowing for long distance information transfer. However, the hyperfine splittings of the lowest energy levels, required for laser cooling, have not been measured. We present progress and recent results towards measuring the hyperfine splittings of these levels in lanthanum by saturated absorption spectroscopy with a hollow cathode lamp.

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