

Abstract Submitted
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Towards quantum memory with rare-earth-ions in crystals HAO-
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Joint quantum institute, University of Maryland — Quantum memory is essential
to the future of quantum information. At cryogenic temperatures, solids containing
rare-earth-ions (REI) offer naturally trapped atomic systems for quantum memory
implementations. The properties of REI in crystals enable broadband, efficient,
and long-lived quantum memory in solid state materials. Progress to-date toward
ensemble-based quantum memory with REI solids has been hampered by inhomogeneous
broadening. Recent progress on stoichiometric materials narrows down the
inhomogeneous broadening by 2 orders of magnitude, opening up new avenues for
quantum memory. We report progress toward quantum memory with Eu^{3+} in crystals.

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