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Frequency stability measurement of pulsed superradiance from strontium¹ MATTHEW NORCIA, JULIA CLINE, JOHN ROBINSON, JUN YE, JAMES THOMPSON, JILA, University of Colorado Boulder — Superradiant laser light from an ultra-narrow optical transition holds promise as a next-generation of active frequency references. We have recently demonstrated pulsed lasing on the milliHertz linewidth clock transition in strontium. Here, we present the first frequency comparisons between such a superradiant source and a state of the art stable laser system. We characterize the stability of the superradiant system, and demonstrate a reduction in sensitivity to cavity frequency fluctuations of nearly five orders of magnitude compared to a conventional laser.

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