

Abstract Submitted  
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**Continuous Wave Rotational Raman Sideband Generation in Deuterium Gas** JONATHAN GREEN, DANIEL SIKES, DENIZ YAVUZ, University of Wisconsin-Madison — We report 140mW of CW rotational Raman sideband power generated in deuterium gas. To our knowledge this is the most optical power generated by using CW rotational Raman scattering. We begin with a 30W CW beam with a wavelength of 1.5 microns. This beam is locked, using the Pound-Drever-Hall technique, to a high finesse cavity ( $F \sim 10,000$ ) filled with  $\sim .5$  atm of  $D_2$ . The beam is very far detuned from the nearest electronic state in deuterium, but in the cavity it is sufficiently powerful to cause the molecules to undergo a rotational Raman transition and generate 140mW of transmitted Stokes radiation.

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