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Broadband Continuous-Wave Light Modulation at Molecular Frequencies JOSHUA WEBER, DAVID GOLD, DENIZ YAVUZ, University of Wisconsin - Madison — We use continuous-wave (CW) stimulated Raman scattering inside a deuterium-filled, high-finesse cavity as a wavelength-independent molecular modulator. Intense CW laser beams drive a two-photon vibrational transition in deuterium and build up a coherence between molecular states. Any incident independent beam then mixes with this coherence and generates frequency-shifted sidebands in a single pass through the cavity. The frequency shift is approximately 89 THz, which corresponds to the Raman transition frequency. Our goal is to exploit this large modulation frequency and the broadband capabilities of the modulator to generate a CW spectrum spanning the full range of optical frequencies.

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