

Abstract Submitted
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DAVLL with Frequency Markers¹ FRANK A. NARDUCCI, ETHAN R. ELLIOTT, CHRISTOPHER J. LEHMAN, Naval Air Systems Command — The Dichroic Atomic Vapor Laser Lock (DAVLL) technique for locking lasers to atomic transitions has the advantage of a large capture range but the disadvantage that there are no convenient frequency markers to know very well where a laser is tuned relative to atomic transitions. On the other hand, saturated absorption spectroscopy has the frequency markers, but not the large capture range. We present a simple, compact scheme that combines the advantages of both techniques. Spectral measurements in all four Doppler absorption lines of Rubidium will be presented, showing a very rich structure with multiple features that can be used either as frequency references or additional frequency locking. The underlying physics of these features are sorted out and identified. Of particular use to the laser-cooling community is a large cross-over resonance that occurs right at the location of the cooling resonance independent of the strength of the magnetic field used to generate the DAVLL signal.

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