

Abstract Submitted  
for the DAMOP06 Meeting of  
The American Physical Society

**Autler Townes Effect as a Probe of Molecular Electronic Transition Dipole Moments**<sup>1</sup> ERGIN AHMED, PENG QI, OMER SALIHOGLU, BEDIHA BESER, SVETLANA KOTOCHIGOVA, MARJATTA LYYRA, Temple University — We present a fundamentally new approach for measuring the transition dipole moment of molecular transitions, footnoteE. Ahmed et al., J. Chem. Phys. 2006 (in press). which combines the benefits of quantum interference effects, such as the Autler-Townes (AT) splitting, with the familiar R-centroid approximation. This method is superior to other experimental methods for determining the absolute value of the R-dependent electronic transition dipole moment function, since it requires only an accurate measurement of the coupling laser electric field amplitude and the determination of the Rabi frequency from an Autler Townes split fluorescence spectral line. Using this cw triple resonance excitation technique the internuclear distance dependence of the transition moment function can be determined at several very different values of the R-centroid. The transition dipole moments of the A - X of Sodium and Lithium dimers will be illustrated for demonstration purposes. Results will be compared with ab initio calculations.

<sup>1</sup>Supported by NSF

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Date submitted: 31 Jan 2006

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