

EXPERIMENTAL MAPPING OF THE ABSOLUTE VALUE OF THE ELECTRONIC TRANSITION DIPOLE MOMENT FUNCTION  $\mu_e(R)$  OF THE Na<sub>2</sub>  $A^1\Sigma_u^+ - X^1\Sigma_g^+$  SYSTEM

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The absolute value of the transition dipole moment function  $\mu_e(R)$  of the  $A^1\Sigma_u^+ - X^1\Sigma_g^+$  band of Na<sub>2</sub> was mapped experimentally within a relatively large range of internuclear distance R. The transition dipole moment matrix element of a set of rovibrational transitions between the  $A^1\Sigma_u^+$  and  $X^1\Sigma_g^+$  states was measured using the Autler-Townes (AT) effect<sup>a</sup>. By employing the R-centroid approximation, or a fit with a polynomial function involving the higher R-moments,  $\mu_e$  as function of the internuclear distance was constructed. The AT effect based measurements give the absolute value of  $\mu_e$  which can be used to "normalize" the transition dipole moment functions  $\mu_e(R)$  obtained with other experimental techniques, such as line intensity based measurements, which in general give only the relative behavior of  $\mu_e(R)$ .

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<sup>a</sup>E. Ahmed et al. J. Chem. Phys. 124, 084308 (2006)