APPLICATION OF THE 'MLR' DIRECT POTENTIAL FITTING (DPF) METHOD FOR THE $X^1\Sigma_g^+$ STATE OF Cs_2

JOHN A. COXON, *Department of Chemistry, Dalhousie University, Halifax, Nova Scotia B3H 4J3, Canada*; PHOTOS G. HAJIGEORGIOU, *Department of Life and Health Sciences, University of Nicosia, 46 Makedonitissas Avenue, P.O Box 24005, 1700 Nicosia, Cyprus*.

A set of 16544 $A^1\Sigma_u^+$ - $X^1\Sigma_g^+$ fluorescence line positions[a] with a measurement precision of 0.001 cm^{-1}, and which samples ground state levels up to v'' = 135 lying about 28 cm^{-1} below the dissociation limit, has been employed in least-squares fits using the MLR direct potential fitting approach [b]. As well as the extended MLR model employed recently for Li_2, a further extension employing three y_i-variables leads to an optimum model for Cs_2 that ensures a realistic extrapolation into the long-range region in accord with the theoretical dispersion constants.

[a] C. Amiot and O. Dulieu, J. Chem. Phys. **117**, 5155 (2002).
[b] R. J. Le Roy and R. D. E. Henderson, Mol. Phys. **105**, 663 (2007).