

DETERMINATION OF THE 0_g^- PURE LONG RANGE POTENTIAL CURVE OF Rb_2 AND Cs_2 ; APPLICATION TO ULTRACOLD MOLECULES FORMATION

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This work presents an accurate study of the $0_g^-(P_{3/2})$ pure long range electronic state of the $^{87}\text{Rb}(5S)$ - $^{87}\text{Rb}(5P_{3/2})$ and $^{133}\text{Cs}(6S)$ - $^{133}\text{Cs}(6P_{3/2})$ molecular systems. Generalized simulated annealing method was used in order to reduce the high resolution spectral data provided by photoassociative spectroscopy of ultra cold ^{87}Rb and ^{133}Cs atoms. The analysis has allowed the determination of the effective dispersion parameters, the chemical exchange energy contribution as well as the dissociation energy concerning the analytical potential representation of the $0_g^-(P_{3/2})$ state for both, Rb_2 and Cs_2 , molecules. A detailed comparison with the potential curves obtained through RKR procedure is performed, and the consequences for ultracold molecules formation rates are discussed.