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}Rb(5S)-^{87}Rb(5P$_{3/2}$) and ^{133}Cs(6S)-^{133}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.