

Weakly bound $^{87}\text{Rb}_2(5s_{1/2}+5p_{1/2})1_g$ molecule: hyperfine interaction and improved LeRoy-Bernstein analysis

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Data on $(5s_{1/2} + 5p_{1/2}) 1_g$ $^{87}\text{Rb}_2$ state under the D1 limit, provided by a photoassociation experiment on cold atoms, have been analyzed by an improved LeRoy-Bernstein (LRB) approach including linear and non-linear terms and provides a c_6 value of the potential. To do that, using a model for hyperfine structure shifts, we have first subtracted the hyperfine effects in the splitted lines and deduced the vibrational energies. Then, we have used three LRB type models to fit data and have compared the results. We conclude that the next improved LRB ones is well appropriate. From the analysis we deduce an experimental value of c_6 ($c_6 = (16.43 \pm 0.5) 10^4$ a.u.).