

Isotopic and Symmetry Effects in the Study of Cold Monatomic ^{85}Rb and ^{87}Rb Gases

M.T. Bouazza,¹ M. Bouledroua,² A. Allouche,³ M. Aubert-Frécon³

¹ *Physics Department, Badji Mokhtar University, Annaba, Algeria*

² *Faculté de Médecine and LPR, Badji Mokhtar University, Annaba, Algeria*

³ *LASIM, Claude Bernard University, Villeurbanne, France*

boulmoncef@netscape.net

Domain : Other

The isotopic and quantum effects in the study of a low-temperature monatomic rubidium gas are considered in this work. By adopting the Chapman-Enskog model for temperatures ranging from 1K up to 100K, the diffusion coefficients with the symmetry effects, due to the identity of the colliding atoms, are calculated quantum mechanically. By including the exchange interactions, the ground *gerade* and *ungerade* potentials are constructed. The investigation is further extended to analyze the resonance structures in the diffusion cross sections and to compute the scattering lengths.