

New satellite bands in RbCs molecule

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Far quasistatic wings of the principal series lines of Rb and Cs atoms (except first resonance lines) have been investigated in hot and dense Rb-Cs vapor mixture in all-sapphire cell at several temperatures and atom densities [1]. We observed numerous new satellite RbCs bands in absorption spectra, although rubidium and cesium dimer satellite bands were also simultaneously observed [2,3]. We suggest the interpretation of the observed satellite bands as stemming from the avoided crossings of the relevant ion-pair and covalent potential curves. However, the situation in RbCs case is somewhat relaxed in contrast to Rb₂ or Cs₂ cases, since the selection rules for the radiative transitions allow more electronic transitions. Thus, we may expect more avoided crossings, and relevant maxima and minima in the corresponding difference potential curves to be involved in the formation of the observed satellite bands. The collaboration with Orsay theoretical group will bring about new potential curves emerging from the second doublets of Rb and Cs principal series lines, so that the final interpretation of the observed satellite bands will be possible.

References:

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