THE GROUND STATE OF THE LiRb MOLECULE

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The LiRb is the last alkali diatomic molecule (except for those containing Fr) which has avoided so far high resolution experimental observation. In this contribution we present the recent results from high resolution Fourier-transform spectroscopy. Accurate experimental data were collected which cover most of the energy levels of the ground state $X^1\Sigma^+$. For the description of the data a potential energy curve was fitted. Contrary to similar studies in NaRb (Rev. A 72, 062505 (2005)), NaCs (J. Phys. B: At. Mol. Opt. Phys. 39 S929 (2006)), KRb (Phys. Rev. A 76, 022511 (2007)) etc. no transitions to the state $a^3\Sigma^+$ were registered, which would additionally be needed for modeling cold collisions between Li and Rb. The situation in LiRb is very similar, although not completely to that in LiCs (Phys. Rev. A 75, 042513 (2007)) and LiK (J. Chem. Phys. 126, 194313 (2007)) . We will present a comparison between these molecules trying to understand the origin of these experimental observations.