

Abstract Submitted
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Electronic Transition Dipole Moment and Radiative Lifetime Calculations of Lithium Dimer Ion-Pair States ERGIN AHMED, AYDIN SANLI, XINHUA PAN, DAVID BEECHER, PHILLIP ARNDT, JENG TSAI, Temple University, SYLVIE MAGNIER, Universite des Sciences et Technologies de Lille Laboratoire de Physique des Lasers, MARJATTA LYYRA, Temple University — The higher lying $^1\Sigma_g^+$ symmetry states of lithium dimer are known to exhibit multiple minima and shoulders in their potential energy curves (PECs) due to the interactions with the Li^+Li^- ion-pair Coulomb potential. The ion-pair character of these potential energy curves makes their lifetimes interesting because of the unusual behavior of their transition dipole moments which exhibits rapid changes in regions of internuclear distance corresponding to potential energy curve shoulders and double wells. We present here a computational study of the lifetimes of the ion-pair ($n^1\Sigma_g^+, n = 3 \sim 6$) states of Lithium dimer. The lifetimes are calculated using *ab-initio* electronic transition dipole moment functions. The calculations include the radiative contributions of all the allowed bound-bound and bound-free transitions to lower electronic states.

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