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Calculations of long-range three-body interactions for Li($2\,^2S$)-Li($2\,^2S$)-Li$^+$($1\,^1S$)[1] PEI-GEN YAN, U. New Brunswick, LI-YAN TANG, WIPM, ZONG-CHAO YAN, U. New Brunswick WIPM, JAMES F BABB, ITAMP, Harvard-Smithsonian CfA — Using perturbation theory for energies, we evaluate the additive and nonadditive interaction coefficients C_4, C_6, C_7, C_8 and C_9 for the Li($2\,^2S$)-Li($2\,^2S$)-Li$^+$($1\,^1S$) system. The obtained coefficients C_n are evaluated with highly accurate variationally-generated nonrelativistic wave functions in Hylleraas coordinates. The nonadditive interaction coefficients depend on the geometrical configurations of this three-body system and on the different positions of the ion for each configuration. Our calculations may be of interest for the study of three-body recombination and for constructing precise potential energy surfaces.

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Pei-Gen Yan
University of New Brunswick

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