Rovibronic computations of the b $^3\Pi_g$ and c $^3\Sigma_g^+$ electronic states of the helium dimer including the non-adiabatic, relativistic, and leading-order QED couplings and corrections

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We report potential energy curves, diagonal Born–Oppenheimer, non-adiabatic mass, relativistic, and leading-order QED corrections for the b $^3\Pi_g$ and c $^3\Sigma_g^+$ electronic states of the helium dimer. Considering all non-adiabatic and relativistic couplings, we constructed the complete electronic-spin manifold of the b $^3\Pi_g$-c $^3\Sigma_g^+$-B $^1\Pi_g$-C $^1\Sigma_g^+$ states, enabling the computation of precise rovibrational energies for the b $^3\Pi_g$ and c $^3\Sigma_g^+$ states, including the fine structure and zero-field splittings.