

Bounds on the shifts of binding energies and variation of the spectral subspaces of few-body Hamiltonians

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We begin with discussing the older [1, 2] and latest [3, 4] results on variation of the spectrum and spectral subspaces of an abstract Hermitian operator under a perturbation. Then we apply these results to few-body Hamiltonians. In particular, we give a priori estimates on the shifts of binding energies and variation of the corresponding eigensubspaces of a few-body Schrödinger operator if an extra interaction or an external field is added, provided that positions of the initial binding energies are known. It should be underlined that our estimates are not perturbative in the sense of the conventional perturbation theory. The bounds we give only involve the distance between parts of the spectrum of the initial Hamiltonian and the norms for operators that describe the additional potentials/fields.

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