Qeios

Peer Review

Review of: "On the Application of the Rayleigh-Ritz Method to a Projected Hamiltonian"

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The work is novel, which leads to the estimate of the eigenvalues from below, which should be useful. The authors have used some common examples to show this, and from the values obtained for the toy models, it seems convincing.

However, I have a problem. Apparently, only a few energy values can be estimated using this method, e.g., in one dimension, only the ground state. The authors have not explained the reason why all the other energy values come out to be zero. I would like a response to this comment before this can be considered for publication. Of course, to estimate the ground state, this would be useful in any dimension, as one can use both the conventional method (which has a lower bound) and the present one, which has an upper bound.

Minor points: Exact eigenvalues for the Hamiltonian (7) are expressed in terms of k = 1, 2, ..., which is correct in one dimension, and again k=1,2,...,D is written on page 3, which may be confusing. For higher dimensions, why not use k_{x_1}, k_{x_2} (or some suitable notation), where each takes values 1, 2, ...?

Also, eq. 9 is incomplete. As far as I understood, it should go up to N. Right?

Lastly, probably it would be good to add the exact values in the tables.

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Declarations

Potential competing interests: No potential competing interests to declare.