

Comment: Improvement of Weyl's Inequality

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Recently an improvement [1] of Weyl's inequality [2] was presented that relies on estimates of the overlap between sub-eigenspaces of operators A and B to give improved lower bounds to the eigenvalues of the sum operator $C = A + B$. A superior approach to improvement is to formulate the problem in terms of truncated variations of A and B which offers three advantages: (1) the lower bound to the ground-state eigenvalue improves; (2) the improvement is easily generalized to excited-states; (3) comparison with other lower bound methods is simple.

Point three is particularly important because formulation with truncated operators makes the author's work essentially an inferior version of the simple and elegant work by Norman Bazley and David Fox [3]. The author offers his apologies for his lack of consideration of truncated operators and encourages readers to consult pages 1149–1150 of the original work by Bazley and Fox.

References

- [1] M.G. Marmorino, *J. Math. Chem.* 38 (2005) 415–424.
- [2] H. Weyl, *Math. Ann.* 71 (1912) 441.
- [3] N.W. Bazley and D. W. Fox, *J. Math. Phys.* 4 (1963) 1147–1153.