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Short title: On the metric of a non-Hermitian model.

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Review text:

For a free quantum particle living on an interval of $x \in (-1, 1)$ the Sturm-Liouville oscillation theorems tell us that the wave functions and their derivatives can only match in a specific manner in the origin. The authors make use of this fact and introduce a trivial spectrum-preserving two-parametric asymmetry in the model. This produces a Hamiltonian H which is/looks manifestly non-self-adjoint with respect to the "usual" inner product [i.e., in the "false", unphysical Hilbert space $\mathcal{H}^{(F)}$ - I am using and recommending here my own notation as well as detailed comments available in MZ, SIGMA 5 (2009), 001 (doi:10.3842/SIGMA.2009.001)]. Then the authors derive a formula for the metric operator in the correct physical Hilbert space = $\mathcal{H}^{(S)}$ in my notation).