

This is a review text file submitted electronically to MR.

Reviewer: Znojil, Miloslav

Reviewer number:

Address:

NPI ASCR,
250 68 Rez,
Czech Republic
znojil@ujf.cas.cz

Author: Mustafa, Omar; Mazharimousavi, S. Habib

Short title: First-order intertwining operators with position dependent mass and η -weak-pseudo-Hermiticity generators.

MR Number: 2396775

Primary classification: 81Q05

Secondary classification(s): 81Q10

Review text:

The paper develops, in the context of the quantum models exhibiting a position-dependent mass, the idea of studying (Hamiltonian) operators which are similar to their conjugates. This idea (which dates back, at least, to Dieudonne, cf. J. Dieudonne, Quasi-Hermitian operators, in Proc. Int. Symp. Lin. Processes, 1960, Jerusalem Academic Press) found recently applications in physics. The authors consider the particular (viz., the first-order differential) choice of the similarity intertwiner η as proposed a few years ago [cf. E. Caliceti, F. Cannata, M. Znojil and A. Ventura, Construction of PT-asymmetric non-Hermitian Hamiltonians with CPT- symmetry. Phys. Lett. A 335 (2005) 26-30, and B. Bagchi, A. Banerjee, E. Caliceti, F. Cannata, H. B. Geyer, C. Quesne and M. Znojil, CPT-conserving Hamiltonians and their nonlinear supersymmetrization using differential charge-operators C , Int. J. Mod. Phys. A 20 (2005) 7107 - 7128]. Selected technical details are illustrated using the Scarf II and Samsonov-Roy interaction potentials.