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Short title: Is weak pseudo-Hermiticity weaker than pseudo-Hermiticity?

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Review text:

Following the pioneering review paper by F.G. Scholtz, H.B. Geyer and F.J.W. Hahne [Ann. Phys. (N.Y.) 213 (1992), p. 74], the practical (e.g., variational) tractability of a broad family of phenomenological models in quantum mechanics can be enhanced by the use of certain non-Hermitian operator representations H of observables which only become Hermitian with respect to a specific and nonstandard ad hoc scalar product. Recently, a special implementation of the same idea has been proposed by Bender et al. (cf., e.g., the compact review by C.M. Bender [Czech. J. Phys. 54 (2004), p. 1027]) who postulated, in addition, the auxiliary relation $H PT = PT H$ where, originally, the Hermitian operator P of parity was multiplied by T representing time reversal. This opened the scene for the short Mostafazadeh's paper in question. The rest of the story is summarized there and it is shown that and how one can relate the notions of the PT symmetry based on Hermitian P s (i.e., in the author's language, the P -pseudo-Hermiticity) and of the PT symmetry based on non-Hermitian P s (i.e., in the author's language, the weak P -pseudo-Hermiticity). The text is compact, its definitions are clear and well formulated, its propositions and a theorem are carefully and responsibly proved. A nice and rewarding mathematical reading, especially for the author of the first, three-dimensional matrix example in section III (cf. ref. [7], to be complemented here, perhaps, by its longer continuation with dimensions running up to seven: Miloslav Znojil, Exactly solvable models with PT -symmetry and with an asymmetric coupling of channels, J. Phys. A: Math. Gen. 39 (2006) 4047 - 4061).