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Review text:

Rigorous and extremely interesting contribution to the subject explained by the title. As the fourth item in the author's 2010 series it extends some of his results to the case of operators which are not self-adjoint in a *given*, "false" Hilbert space. Typically, one has in mind quantum Hamiltonians a.k.a. "PT-symmetric" or "cryptohermitian"; they ARE self-adjoint in ANOTHER, "standard" Hilbert space after all.

Although the author himself characterizes his effort as motivated by the needs of quantum physics, the impact of his message in the community might be weakened by his "original" notation. This creates an unnecessary obstacle. *Pars pro toto*, the Hamiltonian operators are mostly found denoted by symbols "Θ" which, in turn, is precisely the letter used by some other authors for his present x, etc. This being said, the need of the rigorous treatment of the subject has been urgent. The more one regrets that this "applicability" point is not treated properly. E.g., the lack of references to at least a few key papers in the field would certainly amend its possible influence. One misses, most badly, the reference to a topic which certainly is particularly close to the author's range of tastes, viz., to the use of auxiliary bosons in nuclear physics (cf. Scholtz et al, 1992).

The impact of the message in the mathematically oriented community might equally suffer from the absence of a few other standard references. *Pars pro toto* one misses the Krein-space connection (Langer, Veselic, plus monographs). The reference [11]-[14] to the recent re-rediscoveries of the idea is certainly insufficient. The readership would certainly profit also from the citation of J. Dieudonné's "Quasi-Hermitian operators" [Proc. Int. Symp. Lin. Spaces, Pergamon, Oxford, 1961, pp. 115-122] and to some of its sequels where the subject is called, incidentally, "quasi-Hermiticity" and where the key message is not too far from the present one (I have in mind, e.g., that "it is not necessary that x^{-1} exists").