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**Review text:**

Superconcise, six-paged review of the recent innovative trend, in quantum mechanics, of using nontrivial metric  $\eta \neq I$  in its Hilbert space of states. Two prototype Hamiltonians discussed [cf. eqs. (1) - the imaginary cubic anharmonic oscillator - and (7) - a Bogoliubov equivalent of harmonic oscillator]. The author emphasizes the ambiguity of the choice of  $\eta$  and pays attention to the construction of observables in the form proposed by Mostafazadeh.

All physicists with a deeper interest in the present state of art might extend their reading to all the neighboring pages 1005 - 1148 of ref. [8]. They form the volume of proceedings of the Workshop mentioned in the Acknowledgements [I apologize for recommending them being, at the same time, their Editor].

Mathematicians could, perhaps, appreciate knowing a few complementary references concerning pre-history [one of the best reviews of the  $\eta$ -related (usually called quasi-Hermitian) representants of observables was written, in the highly relevant context of nuclear physics applications and with the problem of ambiguity of  $\eta$  explicitly addressed, by F. G. Scholz, H. B. Geyer and F. J. Hahne, Ann. Phys. (NY) 213 (1992) 74]. In this light I would also modify slightly the Jones' proofreading and/or terminology here and there [e.g., pseudo-Hermitian  $-i$  quasi-Hermitian before eq. (3), PC  $-i$  P immediately after eq. (3), metric  $-i$  scalar product before eq. (4)].

Concerning the Jones' first example [my favorite review is G. Alvarez, J. Phys. A: Math. Gen. 27 (1995) 4589], let me finally add a remarkable detail: This oscillator became famous (due to the letter [1] by Bender and Boettcher) not only a few years before even being attributed any correct  $\eta$  (i.e., a correct quantum-mechanical interpretation [6]) but even a few years before the rigorous

proof of the reality of its spectrum became available [2]. Paradoxically, the contemporary knowledge of its (at that time, the only available) “wrong metric” (i.e., of the parity  $P$  which plays the role of a mere auxiliary and indefinite pseudo-metric) still gave the widespread nickname of  $PT$ -symmetric quantum mechanics to all the subject.