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Reviewer: Znojil, Miloslav

Reviewer number:

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

Author: Levai, G.

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Review text:

Let us first warn the reader that although the authors of current textbooks on quantum mechanics rarely fail to mention several exactly solvable illustrative examples using a one-dimensional real potential (like linear harmonic oscillator), I am not aware of a textbook where some real spectrum of bound states would be discussed as generated by a potential which wouldn't be real. Still, such an appealing possibility exists and has been described in a number of papers. In a gap-filling mood G. Levai performs one more step and, in an interesting completion of his older results [27] he studies (separable) partial differential Schroedinger equations with complex solvable potentials and real spectra in two and three dimensions. He shows that many new and interesting phenomenological spectra given by closed formulae can be obtained in this manner. In his analysis he constructively demonstrates that an underlying and, in one dimension, successfully tested heuristic principle of choosing these potentials in the so called PT-symmetric form (whatever the PT-symmetry means) also pays off in more dimensions. In two illustrative examples the polar ordinary Schroedinger equation is made solvable via the Scarf I and Rosen-Morse I choice of the polar-angular part of the potential.