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Title: \mathcal{APT} conjugation in a non-Hermitian \mathcal{PT} -supersymmetric quantum mechanical system

Abstract: We present a new formalism to beget a complex parity-time (\mathcal{PT})-symmetric potential by supersymmetric quantum mechanics [1]. As a matter of fact, \mathcal{PT} -symmetric quantum mechanics provides a deeper insight into a quantum mechanical system by introducing the less restrictive and physical requirement, namely \mathcal{PT} symmetry instead of the mathematical requirement, i.e., Hermiticity [2]. Despite all its theoretical and experimental successes, some underlying issues related to the probabilistic interpretation of quantum mechanics, such as the inner product, the normalization, orthogonality, etc, are still controversial [3-7]. Our study focuses on specifying a new inner product that implies the complex conjugation has to be replaced by the anti- \mathcal{PT} (\mathcal{APT}) conjugation in a non-Hermitian \mathcal{PT} -supersymmetric quantum mechanical system.

References:

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