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Explicit Realization of Pseudo-Hermitian and Quasi-Hermitian Quantum Mechanics for Two-Level Systems

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Abstract: We give an explicit characterization of the most general quasi-Hermitian operator H , the associated metric operators η_+ , and η_- -pseudo-Hermitian operators acting in C^2 . The latter represent the physical observables of a model whose Hamiltonian and Hilbert space are respectively H and C^2 endowed with the inner product defined by η_+ . Our calculations allows for a direct demonstration of the fact that the choice of an irreducible family of observables fixes the metric operator up to a multiplicative factor.

Key Words: Pseudo-Hermitian, quasi-Hermitian, metric operator, observable, two-level system.

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