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Pseudo-Hermitian Quantum Mechanics and Some of Its Applications

In this talk I plan to provide a basic review of Pseudo-Hermitian Quantum Mechanics (PHQM) and survey some of the results I obtained during the past two years on various issues related to its structure and applications. In particular, I will discuss a quantum mechanical analogue of Einstein's field equation of General Relativity, describe the geometry of the space of quantum states that is required to address the quantum Brachistochrone problem (optimal-time evolutions) in PHQM, and outline an application of PHQM in the study of electromagnetic wave propagation in arbitrary stationary possibly inhomogeneous and/or anisotropic linear media.

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