SEMINAR ANNOUNCEMENT

國立中山大學物理系113學年度第2學期專題演講

Geometric Formalism for Quantum Mechanics and Emergent Dimensions

Abstract:
Some recent studies have shown that the Schroedinger equation can be realized geometrically. In this talk, we begin by discussing the motivation for such a realization, particularly from the perspective of quantum information in the non-Hermitian quantum regime. We then briefly review some fundamental concepts of differential geometry, specifically Riemannian geometry, and explore its similarities and connections with quantum physics. Next, we demonstrate how hidden dimensions can naturally emerge from parameter spaces and derive the evolution equations for quantum states along these emergent dimensions, along with the equations governing the geometry of the corresponding Hilbert space. Furthermore, we extend the conventional Hermitian perturbation theory to the non-Hermitian regime using a geometric approach. Finally, we present an example of an event-horizon-like phenomenon in a two-qubit system.

References:
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<<Editors' Suggestion>>
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