Miloslav Znojil (Nuclear Physics Institute AS CR, Řež, Czech Republic)

Title: Non-Hermitian observables and new, hybrid formulations of unitary quantum mechanics

Abstract: In 1956, Freeman Dyson discovered that the practical solution of Schrödinger equation may be facilitated when one replaces the standard self-adjoint Hamiltonian $\mathfrak{h} = \mathfrak{h}^\dagger$ by its manifestly non-Hermitian isospectral avatar $H = \Omega^{-1}\mathfrak{h}\Omega$ such that $\Omega^\dagger\Omega = \Theta \neq I$. The standard unitary interpretation of the evolution can be then recovered by a reconstruction of $\mathfrak{h}$ or via the metric Θ changing the Hilbert space, $\mathcal{H}_{auxiliary} \to \mathcal{H}_{physical}$. In the talk a new version of the unitarity-reconstruction strategy based on a suitable factorization of Θ and Ω will be described and illustrated. The formalism with both stationary Θ and non-stationary $\Theta(t)$ will be presented.

References:

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