

Quantum Physics

Quantum Phase Transition in a Pseudo-hermitian Dicke model

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We show that a Dicke-type pseudo-hermitian Hamiltonian undergoes quantum phase transition by mapping it to the "Dressed Dicke Model" through a similarity transformation. We find the positive-definite metric in the Hilbert space of the pseudo-hermitian Hamiltonian so that it is unitary and allows a consistent quantum description. Further, we obtain the limit in which the pseudo-hermitian Hamiltonian is exactly solvable.

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