Quantum Coherence Distribution and High Dimension Complementarity

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In the last few years, the L1 norm has been used as a quantum coherence measure by many authors. In this work, we introduce a variable that mediates the complementarity relation between the L1 norm of coherence, linear entropy, and the predictability of a quantum state of dimension greater than two. We show that this variable indicates the coherence distribution among the pairs of base states expanding the Hilbert space. We also show that a uniform quantum coherence distribution creates a direct complementarity between the L1 norm, predictability, and linear entropy [1].

We also study the measurement of spatial qudits quantum coherence. We treat the optical measure-operators as path-markers and show in which condition an interference pattern can be used for measure the L1 norm. We show some results for qutrit states [2,3].

References

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