Quantum Wave Technologies

A path forward for local realism and its applications

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Introduction and References

The formulation of a locally real representation, LR, is presented in the context of the Quantum Wave Technologies website in the interests of providing a single comprehensive overview of the theoretical basis for LR as well as a perspective of its potential applications. Various preliminary aspects of LR have been disclosed by the authors in prior publications and patents cited in the REFERENCE list below.

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The primary objectives of Quantum Wave Technologies are to formulate a rigorously derived locally real representation of quantum mechanics (LR) and to develop novel technologies that are deduced from physical phenomena predicted by LR.

These objectives, by any measure, are audacious in the regard that the generally accepted “Probabilistic Interpretation” of quantum mechanics presumptively excludes any locally real representation of quantum mechanics including the particular LR formulation discussed here. LR is fully consistent with the underlying mathematical formalism of quantum mechanics but is contrary to the Probabilistic Interpretation of that formalism.

The Probabilistic Interpretation (PI), also commonly referred to as the “Copenhagen Interpretation,” necessitates non-local phenomena such as “entanglement” that are inconsistent with the most fundamental principles of classical physics. Entanglement is of special interest because it presumptively facilitates exotic applications such as quantum computing and quantum teleportation.

We show here that reported tests, such as Bell experiments that support PI, do not exclude the particular LR formulation of local realism. Additionally, we detail a performed experiment that is consistent with LR but excludes PI. Well known published results purportedly demonstrating entanglement are shown to be illusory. Similarly, the invalidation of PI and of physical phenomena particular to PI such as entanglement necessarily also negates applications that are dependent on those phenomena. In that regard, existing demonstrations of applications such as quantum computing and quantum teleportation are also illusory.

Importantly, however, LR opens up a new set of physical phenomena from which novel technologies can be deduced. The present QuWT website discloses a variety of applications that can be realized with those technologies. For example, with respect to electromagnetic radiation, these applications include coherent beams of energy-less empty waves that can be used for stealth communication and for non-destructive biological imaging.

CONTENTS

REFERENCES

S. Mirell and D. Mirell: relevant papers [100+] and patents [200+]

Other relevant publications [300+] and patents [400+]

General related articles, books, papers [500+] and Comments [600+]

Any reference [xxx]-C indicates that a pdf copy is available at this website.

Relevant publications by S.G. Mirell and D.J. Mirell, in references [100+]

[101]-C Stuart Mirell, “Correlated photon asymmetry in local realism,” Physical Review A, Volume 50, No. 1, pp. 839-842 (1994).

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The paper [102]-C comprehensively covers LR processes in which an emitted wave state bears an “observable” which for photons pertains to the readily detectable particle-like energy quantum. This LR representation is extended in [219]-C to include the accompanying emitted orthogonal “non-observable” (empty) wave.

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