Enhancing qubit information with quantum thermal noise

Submitted by François CHAPEA... on Mon, 05/28/2018 - 13:59

Titre	Enhancing qubit information with quantum thermal noise
Type de publication	Article de revue
Auteur	Gillard, Nicolas [1], Belin, Etienne [2], Chapeau-Blondeau, François [3]
Editeur	Elsevier
Type	Article scientifique dans une revue à comité de lecture
Année	2018
Langue	Anglais
Date	1er Octobre 2018
Pagination	219-230
Volume	507
Titre de la revue	Physica A
ISSN	0378-4371
Mots-clés	Decoherence [4], Entropy Stochastic resonance [5], Improvement by noise [6], Quantum information [7], Quantum noise [8]
Résumé en anglais	Informational quantities characterizing the qubit are analyzed in the presence of quantum thermal noise modeling the decoherence process due to interaction with the environment represented as a heat bath at arbitrary temperature. Nontrivial regimes of variation are reported for the informational quantities, which do not necessarily degrade monotonically as the temperature of the thermal noise increases, but on the contrary can experience nonmonotonic variations where higher noise temperatures can prove more favorable. Such effects show that increased quantum decoherence does not necessarily entail poorer informational performance, and they are related to stochastic resonance or noise-enhanced efficiency in information processing.
URL de la notice	http://okina.univ-angers.fr/publications/ua17014 [9]
DOI	10.1016/j.physa.2018.05.099 [10]
Lien vers le document	https://www.sciencedirect.com/science/article/pii/S0378437118306526?via%... [11]

Liens

[1] http://okina.univ-angers.fr/n.gillard/publications
[2] http://okina.univ-angers.fr/etienne.belin/publications
[3] http://okina.univ-angers.fr/f.chapeau/publications
[4] http://okina.univ-angers.fr/publications?f%5Bkeyword%5D=23157
[5] http://okina.univ-angers.fr/publications?f%5Bkeyword%5D=24663
[6] http://okina.univ-angers.fr/publications?f%5Bkeyword%5D=23156
[7] http://okina.univ-angers.fr/publications?f%5Bkeyword%5D=22606
[8] http://okina.univ-angers.fr/publications?f%5Bkeyword%5D=21130
[9] http://okina.univ-angers.fr/publications/ua17014

[10] http://dx.doi.org/10.1016/j.physa.2018.05.099
[11] https://www.sciencedirect.com/science/article/pii/S0378437118306526?via%3Dihub