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Qubit state detection and enhancement by quantum thermal noise

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Titre	Qubit state detection and enhancement by quantum thermal noise
Type de publication	Article de revue
Auteur	Gillard, Nicolas [1], Belin, Etienne [2], Chapeau-Blondeau, François [3]
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Mots-clés	error statistics [4], quantum communication [5], Quantum noise [6], thermal noise [7]
Résumé en anglais	The task fundamental to quantum communication and coding is considered which consists of detecting between two possible states of a noisy qubit, with a performance assessed by the overall probability of detection error. The detection process operates in the presence of decoherence represented by a quantum thermal noise at an arbitrary temperature. With uneven prior probabilities of the two states, as the noise temperature is increased, non-monotonic evolutions are reported for the performance, which does not uniformly degrade. Regimes are found where higher noise temperatures are more favourable to detection, with relation to stochastic resonance effects where noise reveals beneficial to information processing.
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Liens

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