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Mathematical Physics

Convergence of repeated quantum non-demolition measurements and wave function collapse

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Motivated by recent experiments on quantum trapped fields, we give a rigorous proof that repeated indirect quantum non-demolition (QND) measurements converge to the collapse of the wave function as predicted by the postulates of quantum mechanics for direct measurements. We also relate the rate of convergence toward the collapsed wave function to the relative entropy of each indirect measurement, a result which makes contact with information theory.

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