No-Signaling and Quantum Cloning

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The no-signaling (NS) principle is necessary for consistency of the theory of relativity and quantum mechanics. We show that NS principle can be used to *derive* universal and symmetric 1-to-M qubit cloning transformation for *any* allowed value of fidelity. We demonstrate that fidelity determines the cloning transformation uniquely. We also construct the prime cloners which have the property that the fidelity of a 1-to-MN cloner can be obtained by the successive use of 1-to-M and 1-to-N cloners. For a given number of copies, we obtain the *unique* prime cloner [1].

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