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Transmission based qubit noise spectroscopy

Monday, 29 August 2022 14:15 (25 minutes)

Noise spectroscopy is an important first step towards mitigating the detrimental effects of noise on qubits. In this talk I will speak about the transient and long-time transmission through a resonator containing a generic noisy qubit and show that characteristic features of the noise are imprinted in the fluctuations of the averaged resonator response. I will present analytical expressions for the transmission amplitude and speak about the possibility of extracting the power spectral density of arbitrary Gaussian noise with an exponentially decaying error due to finite measurement times [1].

[1] P. M. Mutter and G. Burkard, Phys. Rev. Lett. 128, 236801 (2022)

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