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Collective measurement and system disturbance

Monday, 13 January 2020 14:50 (30 minutes)

In this presentation we will investigate a trade-off between the amount of quantum system disturbance and information gain. Basic theory of quantum measurement and classical information theory will be presented. We will first show possible ways of reducing the overall system disturbance by conveniently defining the measurement operators on two-particle systems. We will then generalize this result by non-distinguishable measurement. These methods will then be used to examine the case where we have N particles in our system. We will show that an appropriate choice of the measurement operator set can decrease the disturbance of our system.

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