

Abstract Submitted
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Implementing general quantum measurements on linear optical and solid-state qubits¹ YUKIHIRO OTA, SAHEL ASHHAB², FRANCO NORI³, RIKEN — We show a systematic construction for implementing general measurements on a single qubit, including both strong (or projection) and weak measurements. We mainly focus on linear optical qubits. The present approach is composed of simple and feasible elements, i.e., beam splitters, wave plates, and polarizing beam splitters. We show how the parameters characterizing the measurement operators are controlled by the linear optical elements. We also propose a method for the implementation of general measurements in solid-state qubits. Furthermore, we show an interesting application of the general measurements, i.e., entanglement amplification.

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²University of Michigan

³University of Michigan

Yukihiro Ota
RIKEN

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