**Quantum efficiency of binary-outcome solid-state detectors**[1]

ALEXANDER N. KOROTKOV, University of California, Riverside — We discuss the definitions of the quantum efficiency for binary-output detectors of solid-state qubits, focusing on the subclass of quantum non-demolition detectors. Similar to the previously considered case of linear detectors, the definitions of the quantum efficiency are based on the relation between the ensemble decoherence and the information acquired from the measurement (this information determines the lower bound for the ensemble decoherence). Quantum efficiency is analyzed for several models of binary-outcome detectors, including indirect projective measurement, linear detector in a binary-output regime, detector for a phase qubit, and detector based on tunneling into continuum.

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