

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Signatures of quantum effects in weak measurements of qubits

RUSKO RUSKOV, Penn State University, ALEXANDER N. KOROTKOV, University of California, Riverside, ARI MIZEL, Penn State University — In many proposed qubit designs, especially solid state qubit systems, it is experimentally difficult to perform ideal projective von Neumann measurements, and one must resort to weak measurements. In this work, we describe signatures of quantum coherence and entanglement in the output of weak measurements. Both one and two qubit cases are addressed. We consider the ability of a measuring device to generate, as well as detect, entanglement. The interpretation of the power spectrum of weak measurements is discussed, especially its “quantum” and “classical” parts.

Ari Mizel
Penn State University

Date submitted: 30 Nov 2004

Electronic form version 1.4