Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Continuous Quantum Measurement of Noncommunting Observables MAICOL OCHOA, University of Pennsylvania, WOLFGANG BELZIG, University of Konstanz, ABRAHAM NITZAN, University of Pennsylvania - Tel Aviv University — Quantum measurement techniques can potentially provide feedback control over quantum systems. In this work we explore the possibility of obtaining simultaneous information on two noncommuting observables defining appropriate Kraus operators acting on a quantum system. We explore several options in the form of such operators and specialize to the case of simultaneous measurement of position and momentum observables. The result of weak and strong measurements are interpolated and continuous-in-time measurement of these observables is also described. This setting departs from previous approaches in which it does not make assumptions on the nature of the measuring devices and concentrates on the mathematical form and the properties of the Kraus operator.

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Date submitted: 16 Nov 2016 Electronic form version 1.4