Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Pricing postselection: the cost of indecision in state discrimination JOSHUA COMBES, Perimeter Institute for Theoretical Physics, CHRISTOPHER FERRIE, University of New Mexico — Postselection is the process of discarding outcomes from statistical trials that are not the event one desires. Postselection can be useful in many applications where the cost of getting the wrong event is implicitly high. However, unless this cost is specified exactly, one might formally conclude that discarding all data is optimal. Here we analyze the optimal decision rules and quantum measurements in a decision theoretic setting where a pre-specified cost is assigned to discarding data. Non-trivial solutions are found for even the simplest state discrimination problem of choosing between two nonorthogonal qubit states. Our solutions interpolate between the Helstrom measurement and the unambiguous state discrimination experiment.

Joshua Combes
Perimeter Institute for Theoretical Physics

Date submitted: 16 Nov 2014 Electronic form version 1.4