

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Time-Symmetric Quantum Mechanics K.B. WHARTON, Department of Physics, San Jose State University, San Jose, CA 95192 — The standard Copenhagen Interpretation of quantum mechanics (QM) is not time-symmetric. For example, the collapse postulate applies only in the forward time direction. But this is merely an asymmetry of the interpretation, not QM itself, which is as time-symmetric as the boundary conditions on the system (1). This motivates the search for an interpretation that consistently explains both a forward-time and reversed-time perspective of the same physical events. I present soon-to-be-published results (2) demonstrating that it is possible to have such an interpretation of non-relativistic QM. This is accomplished by applying two consecutive boundary conditions onto solutions of a time-symmetric wave equation. The results appear to match standard QM, but do so without requiring a time-asymmetric discontinuity upon measurement, thereby realigning QM with an important fundamental symmetry. I will also discuss the application of this technique to the Klein-Gordon wave equation.

(1) Y. Aharonov, P. Bergmann, and J. Lebovitz, “Time symmetry in the quantum process of measurement,” *Phys. Rev.* **134**, B1410 (1964). (2) K. B. Wharton, “Time-Symmetric Quantum Mechanics”, accepted for publication in *Foundations of Physics* **37** (2007).

Kenneth Wharton
San Jose State University

Date submitted: 17 Nov 2006

Electronic form version 1.4