Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Waiting time distributions of mesoscopic conductors GERALDINE HAACK, University of Geneva, Switzerland, MATHIAS ALBERT, University of Paris Sud, Orsay, France, CHRISTIAN FLINDT, MARKUS BUETTIKER, University of Geneva, Switzerland — Electronic transport through mesoscopic structures is stochastic due to the quantum nature of the charge carriers. In full counting statistics the interest is in the number of particles that are detected in a given time interval. Another important and fundamental question concerns the waiting time between consecutive carriers. Recently, waiting time distributions (WTD) have been calculated for periodically driven systems described by master equations and shown to clearly distinguish random charge emissions from charge transfer processes which are frequency-locked to the period of the external drive [1]. In this work we investigate the WTD of a biased quantum point contact (QPC) with one channel [2]. The WTD clearly reflects the fermionic statistics of the elementary charges: with increasing transmission probability of the QPC, the WTD changes from that of a Poisson process for a nearly closed QPC to a Wigner-Dyson distribution, known from the analogous problem of free fermions described by random matrix theory. [1] M. Albert, C. Flindt and M. Buettiker, Phys. Rev. Lett. 107, 086805 (2011). [2] M. Albert, G. Haack, C. Flindt and M. Buettiker, *in preparation.*

Geraldine Haack
University of Geneva, Switzerland

Date submitted: 11 Nov 2011 Electronic form version 1.4