Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

How does money memorize social interactions? Understanding time-homogeneity in monetary systems DIETER BRAUN, MATTHIAS SCHMITT, ANDREAS SCHACKER, Systems Biophysics, Center for Nanoscience, LMU Munich — Understanding how money shapes and memorizes our social interactions is central to modern life. There are many schools of thought on as to how monetary systems contribute to crises or boom/bust cycles and how monetary policy can try to avert them. We find that statistical physics gives a refreshing perspective [1-3]. We analyze how credit mechanisms introduce non-locality and time-heterogeneity to the monetary memory. Motivated by an analogy to particle physics, locality and time-homogeneity can be imposed to monetary systems. As a result, a full reserve banking system [4] is complemented with a bi-currency system of non-bank assets ("money") and bank assets ("antimoney"). Payment can either be made by passing on money or by receiving antimoney. As a result, a free floating exchange rate between non-bank assets and bank assets is established. Interestingly, this monetary memory allows for credit creation by the simultaneous transfer of money and antimoney at a negotiated exchange rate. We analyze this novel mechanism of liquidity transfer in a model of random social interactions, yielding analytical results for all relevant distributions and the price of liquidity under the conditions of a fully transparent credit market.

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Date submitted: 29 Nov 2012 Electronic form version 1.4