Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

On the Triviality of Aging[1] STEFAN BOETTCHER, Physics Department, Emory University, PAOLO SIBANI, Institut for Fysik og Kemi, SDU Odense — The dynamics of complex systems collectively known as glassy share important phenomenological traits. Whether structural or quenched, either in low-T magnets or in dense colloids, physical changes occur in an intermittent fashion and, on average, at a decreasing rate. Despite their microscopic differences, generally, a transition is observed from a time-homogeneous regime to one which is likewise homogeneous, but in terms of the *logarithm* of time: A global change of the independent variable *trivializes* the dynamics. Focusing here on experimental data from dense colloids[2], the crucial importance of record-size fluctuation for the aging dynamics is revealed. A model with a generic stochastic dynamics is introduced[3] which relies on the growth and collapse of strongly correlated clusters ("dynamic heterogeneities"). In the limit where large clusters dominate the dynamics, intermittency in terms of record-size events occurs with rate $\propto 1/t$, implying a homogeneous, log-Poissonian process that qualitatively reproduces the experimental results for colloidal dynamics.[4]

[1]With support from the NSF through grant DMR-0812204
[2]Courtland & Weeks, *J. Phys.: Condens. Matter* **15**, S359 (2003).
[3]see also: Boettcher & Sibani, http://arxiv.org/pdf/0910.5470.
[4]See also http://www.physics.emory.edu/faculty/boettcher/.

Stefan Boettcher
Emory University

Date submitted: 15 Nov 2009 Electronic form version 1.4