Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Statistical analysis of trypanosomes' motility VASILY ZABURDAEV[1], Harvard University, SRAVANTI UPPALURI, THOMAS PFOHL[2], Max-Planck-Institute for Dynamics and Self-Organization, MARKUS ENGSTLER, Biocenter, University of Wuerzburg, HOLGER STARK, Technical University of Berlin, RUDOLF FRIEDRICH, University of Muenster — Trypanosome is a parasite causing the sleeping sickness. The way it moves in the blood stream and penetrates various obstacles is the area of active research. Our goal was to investigate a free trypanosomes' motion in the planar geometry. Our analysis of trypanosomes' trajectories reveals that there are two correlation times - one is associated with a fast motion of its body and the second one with a slower rotational diffusion of the trypanosome as a point object. We propose a system of Langevin equations to model such motion. One of its peculiarities is the presence of multiplicative noise predicting higher level of noise for higher velocity of the trypanosome. Theoretical and numerical results give a comprehensive description of the experimental data such as the mean squared displacement, velocity distribution and auto-correlation function.

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Date submitted: 20 Nov 2009 Electronic form version 1.4