Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Temporal organization of cellular self-replication[1] VICTOR ALEXANDROV, Inst for Advanced Study, RAMI PUGATCH, ICTP, Trieste — Recent experiments demonstrate that single cells grow exponentially in time. A coarse grained model of cellular self-replication is presented based on a novel concept – the cell is viewed as a self-replicating queue. This allows to have a more fundamental look into various temporal organizations and, importantly, the inherent non-Markovianity of noise distributions. As an example, the distribution of doubling times can be inferred and compared to single cell experiments in bacteria. We observe data collapse upon scaling by the average doubling time for different environments and present an inherent task allocation trade-off.

[1]Support from the Simons Center for Systems Biology, IAS, Princeon

Victor Alexandrov
Inst for Advanced Study

Date submitted: 12 Nov 2016 Electronic form version 1.4