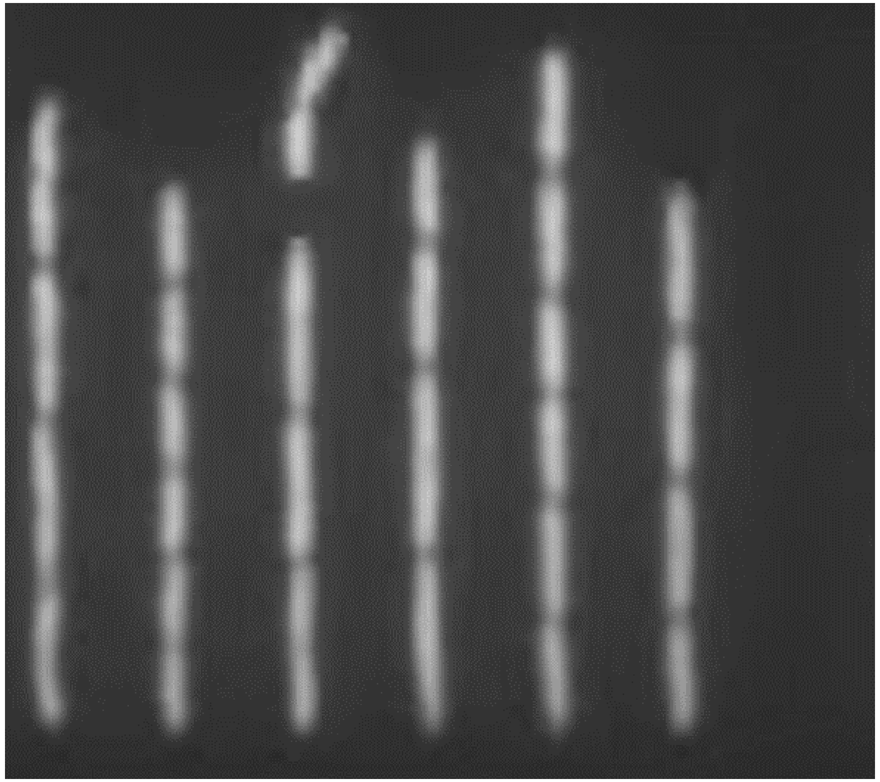
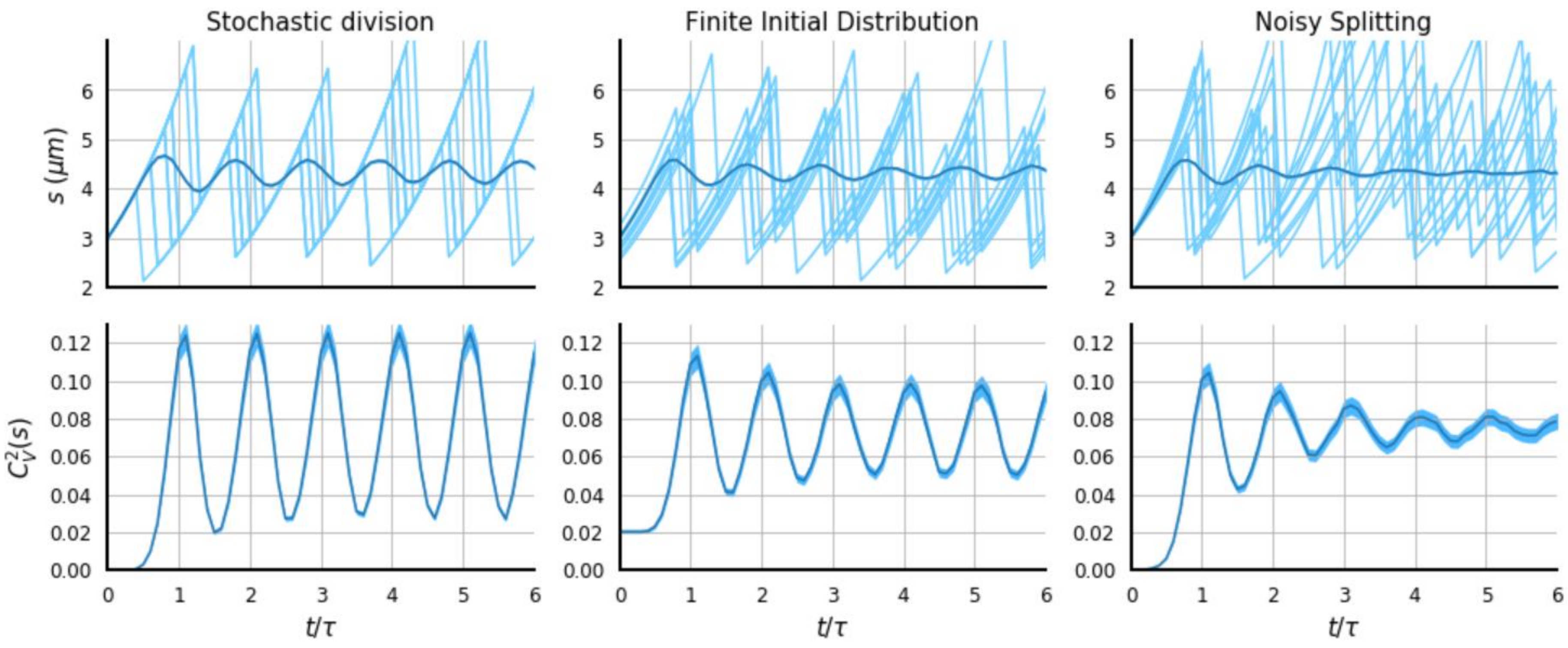
Portfolio designer

Cesar Nieto

Stochasticity in bacteria




Stochastic division
Finite Initial Distribution
Noisy Splitting
s (μm)
$C_V^2(s)$
t/τ
t/τ
t/τ

PHYSICAL REVIEW E
covering statistical, nonlinear, biological, and soft matter physics

Accepted Paper

Unification of cell division control strategies through continuous rate models

Phys. Rev. E

César Nieto, Juan Arias-Castro, Carlos Sánchez, César Vargas-García, and Juan Manuel Pedraza

Accepted 25 November 2019

ABSTRACT

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Recent experiments have supported the Adder model for {E. coli} division control. This model posits that bacteria grow, on average, a fixed size before division. It also predicts decorrelation between the noise in the added size and the size at birth. Here we developed a new theory based on stochastic hybrid systems which could explain the main division strategies, including not only the adder strategy but the whole range from sizer to timer. We use new experiments to explore the division control of {E. coli} growing with glycerol as carbon source. In this medium, the

Physical Biology

ACCEPTED MANUSCRIPT

Correlation between protein concentration and bacterial cell size can reveal strategies of gene expression

Cesar Augusto Nieto[1], Cesar Augusto Vargas Garcia[2], Carlos Sanchez[3], Juan Carlos Arias-Castro[3] and Juan Manuel Pedraza[4]

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https://doi.org/10.1186/s12859-019-3213-7

BMC Bioinformatics

RESEARCH Open Access

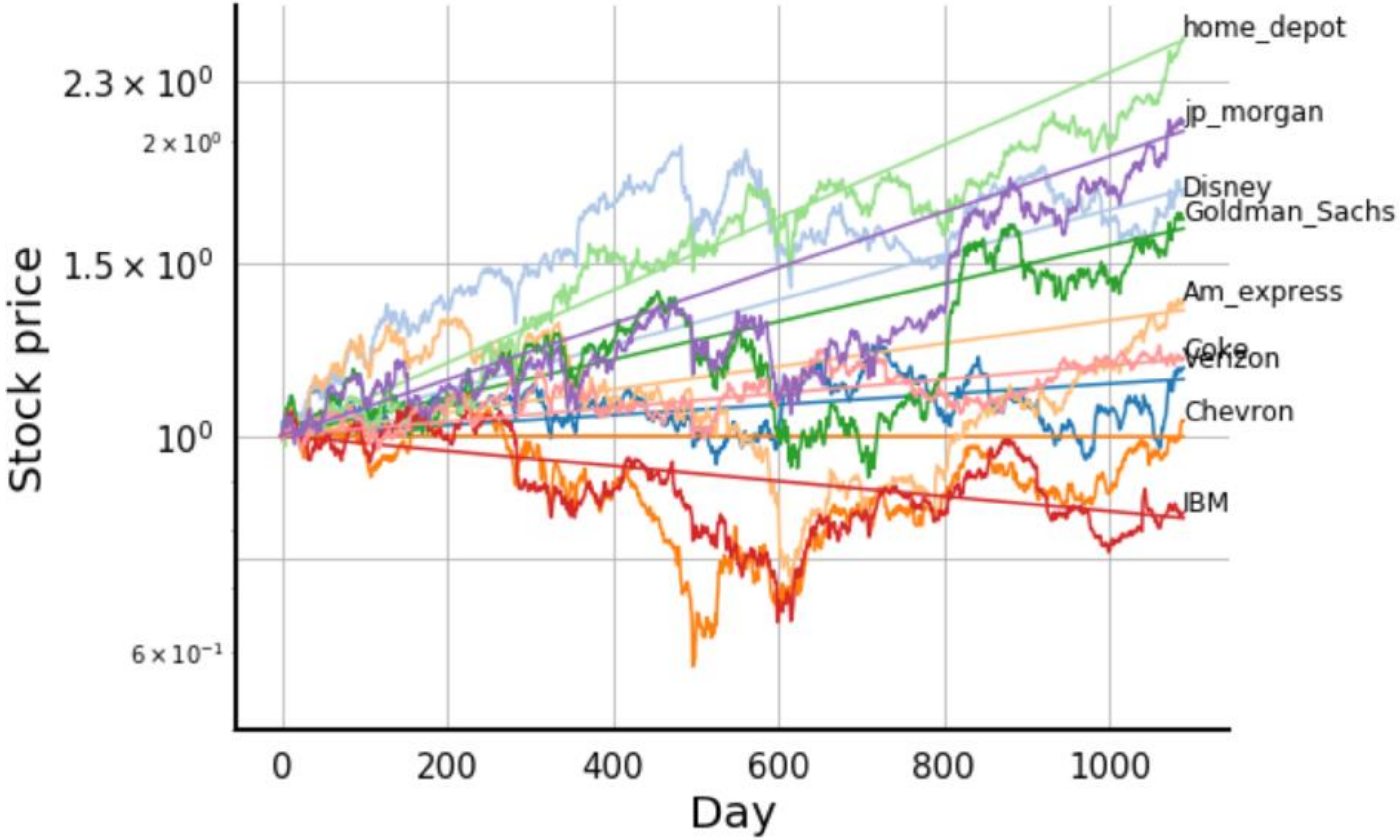
Efficient computation of stochastic cell-size transient dynamics

Check for updates

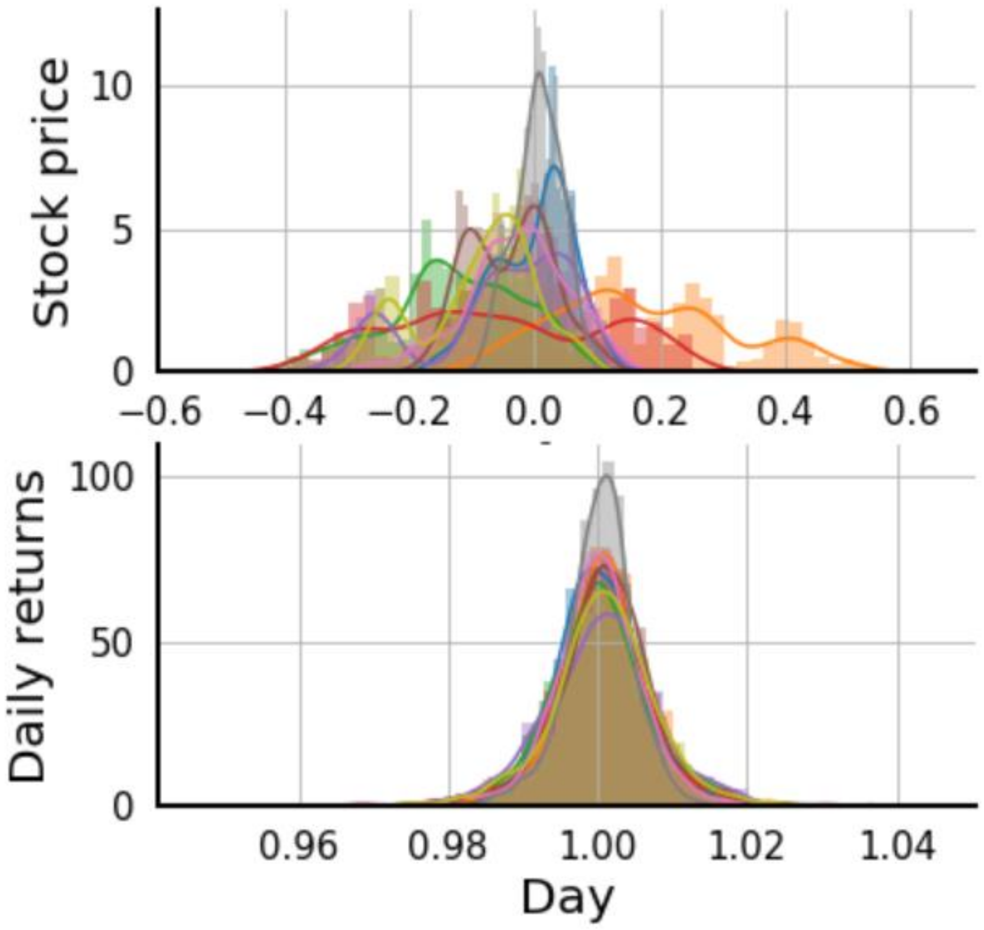
Cesar Augusto Nieto-Acuna[1], Cesar Augusto Vargas-Garcia[2*], Abhyudai Singh[3] and Juan Manuel Pedraza[1]

From Joint 30th International Conference on Genome Informatics (GIW) & ; Australian Bioinformatics and Computational Biology Society (ABACBS) Annual Conference
Sydney, Australia. 9-11 December 2019

Analyzing the fluctuations of the stock market

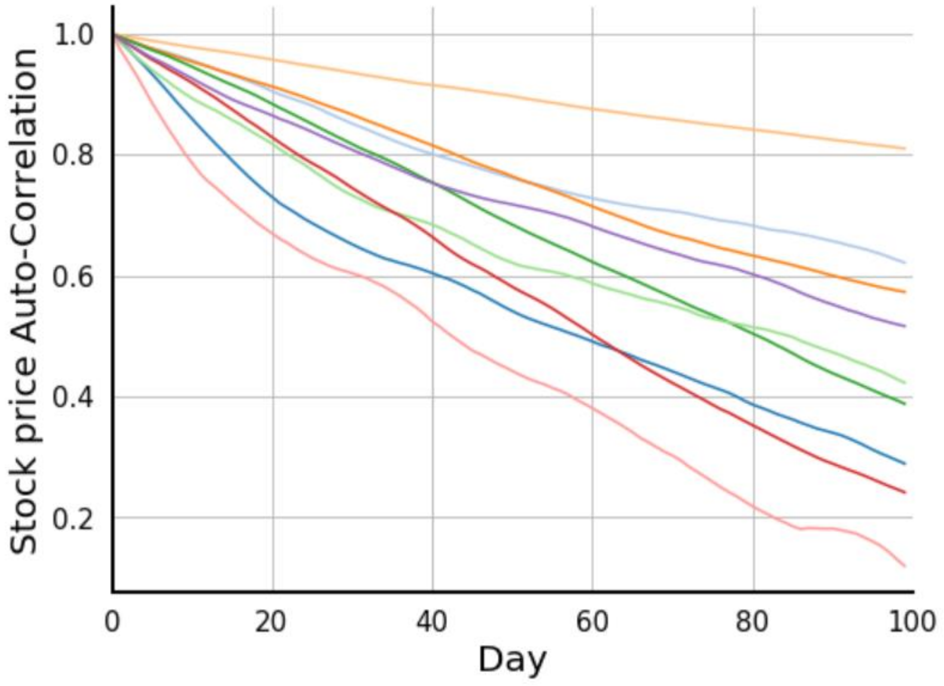


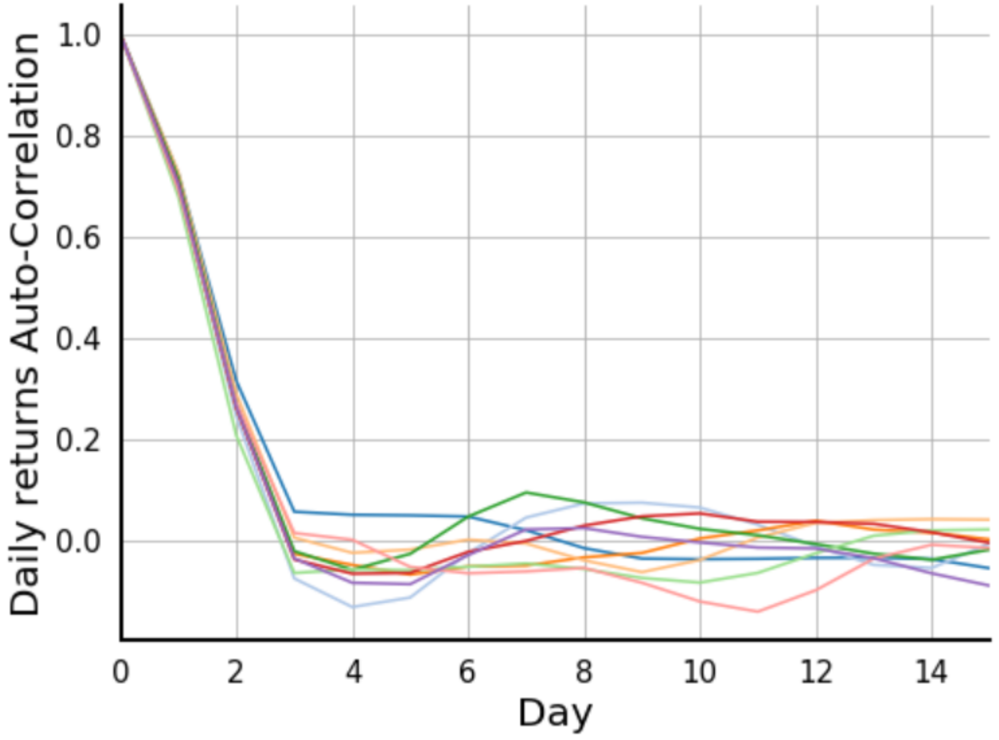
Analyzing the fluctuations



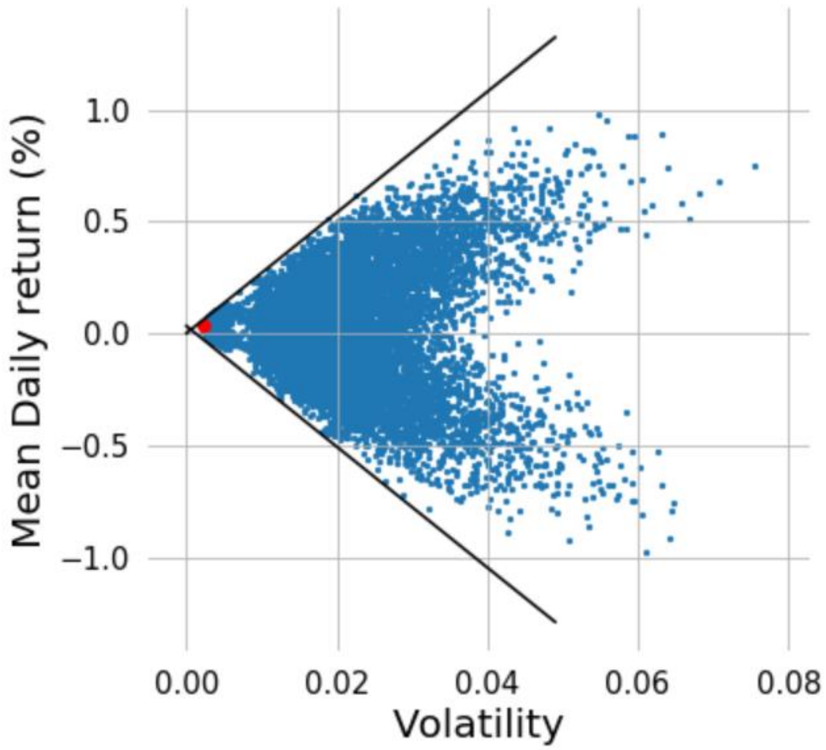
Ito calculus can be used!

Autocorrelation





Combining different portfolio distributions, we can minimize volatility



How is the optimum portfolio?