URM-NSF Comp. Bio.

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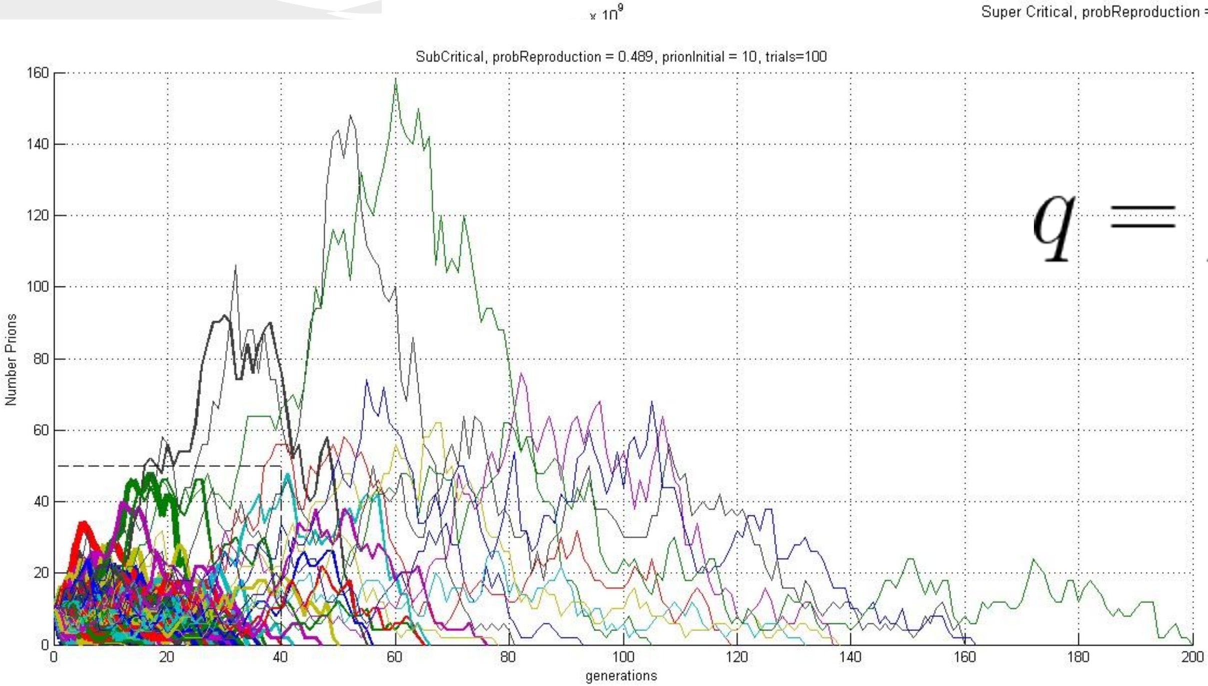
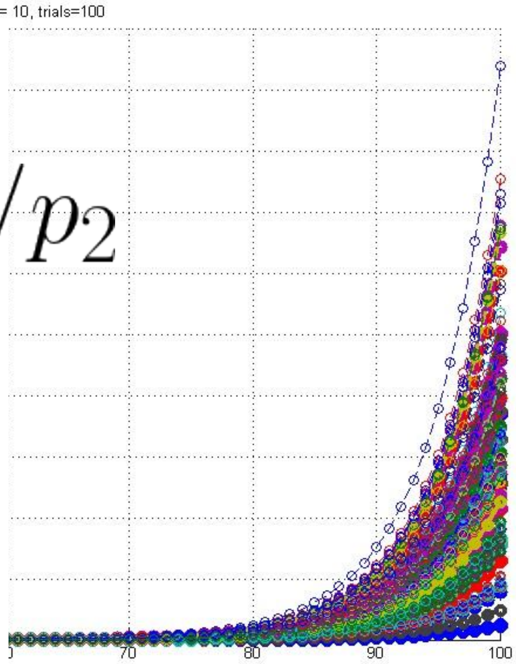
Corollary 4.1 Branching Process | 0.449,0.437

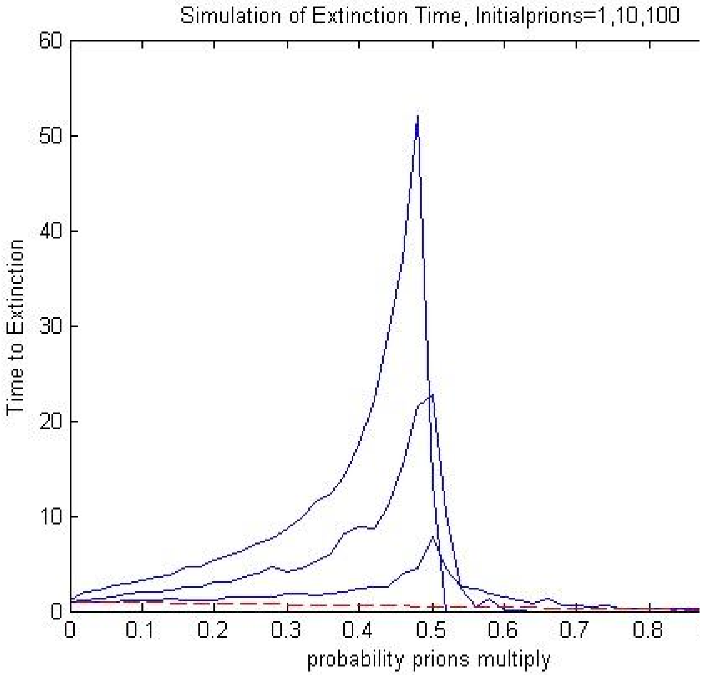
$$m = f'(t) = d/dt \sum a_n t^n$$

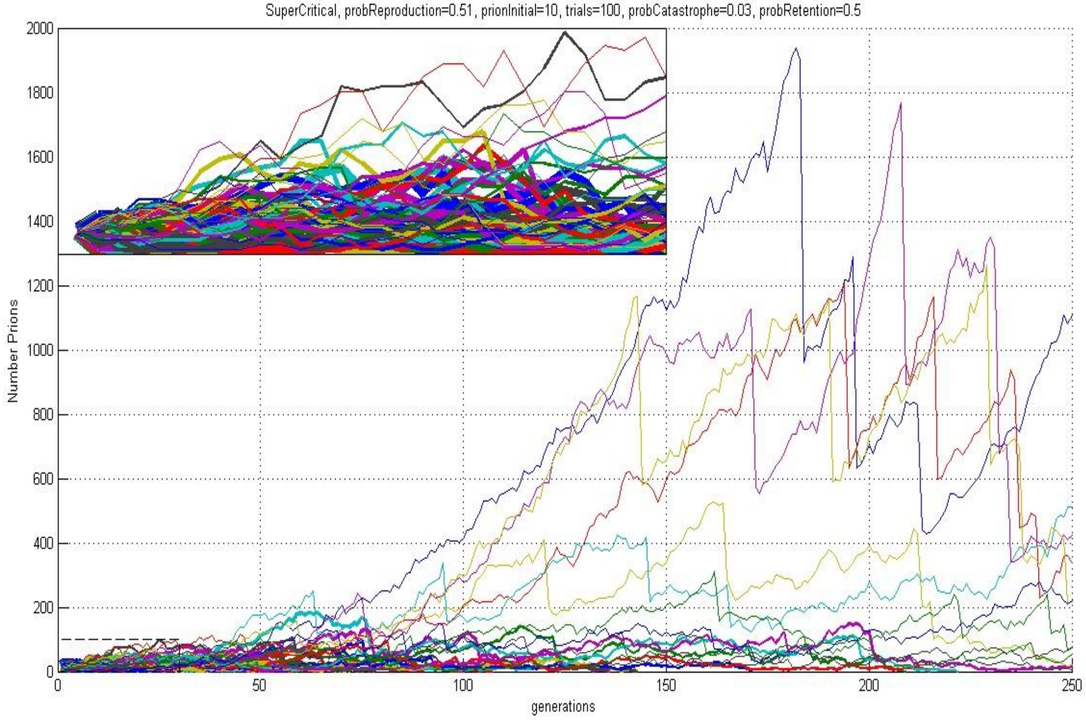


$$q = p_0/p_2$$

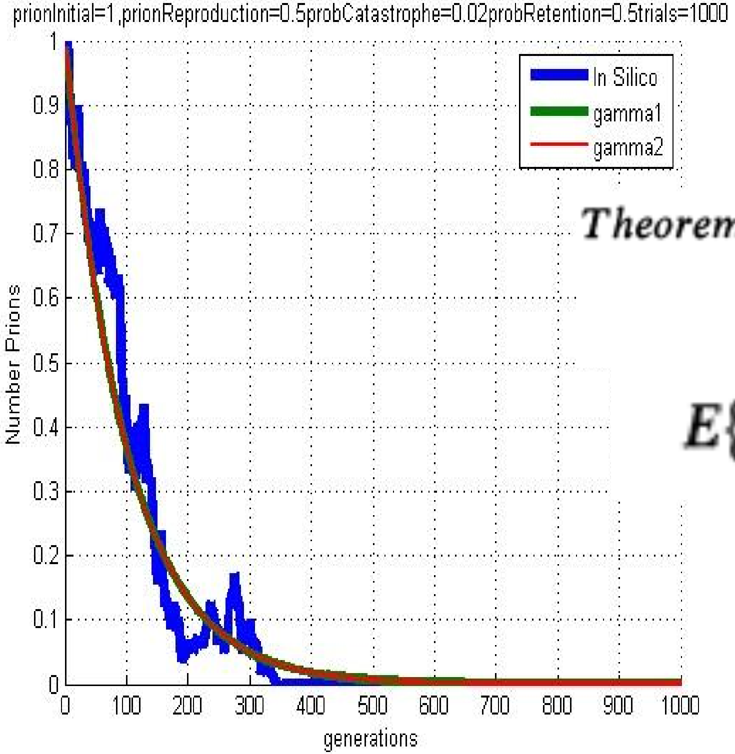


Catastrophic Branching & Extinction Time





Branching Limit Theorems



A BRANCHING PROCESS WITH DISASTERS

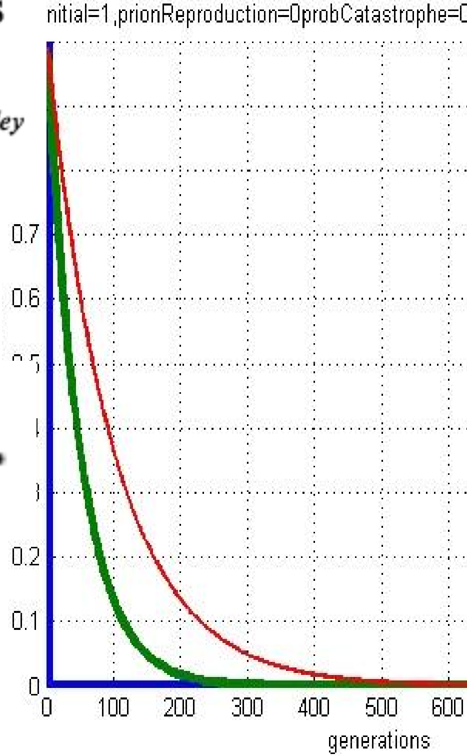
NORMAN KAPLAN,[1] *University of California, Berkeley*
AIDAN SUDBURY, *University of California, Berkeley*
TRYGVE S. NILSEN,[2] *University of Bergen, Norway*

Theorem 2.1.

$$E\{Z(t)\,|\,F\} = p^{N(t)}\,E\{X(t)\}$$

$$E\{Z(t)\} \sim e^{\gamma_1 t}, \quad \gamma_1 = \alpha - \beta.$$

J. Appl. Prob. **12**, 47–59 (1975)
Printed in Israel



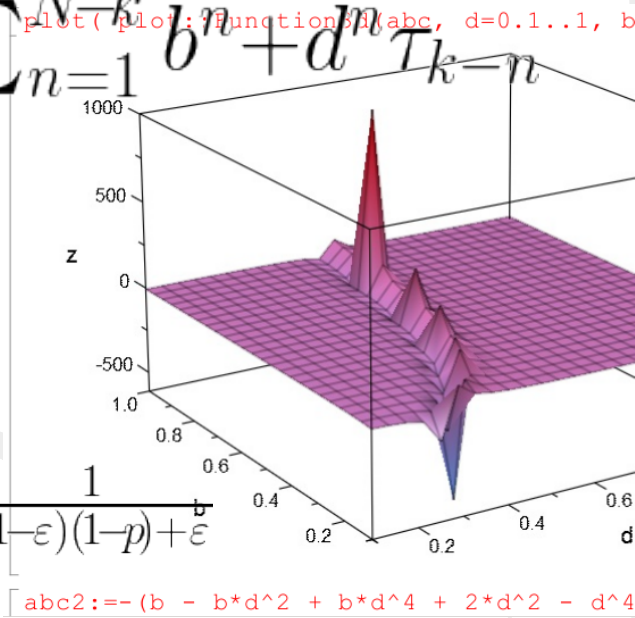
Derived Discrete Model| k=1:N/2, k=N/2+1:N

$$-1 = \sum_{n=1}^{k} b^n t_{n+k} - \sum_{n=1}^{k} (b^n + d^n)\tau_k + \sum_{n=1}^{k} d^n \tau_{k-n}$$

$$-1 = \sum_{n=1}^{N-k} b^n t_{n+k} - \sum_{n=1}^{k} d^n \tau_{k-n} - \sum_{n=1}^{N-k} b^n + d^n \tau_{k-n}$$

$$\begin{pmatrix} 1 & 0 \\ d & -d \end{pmatrix} \begin{pmatrix} \tau_0 \\ \tau_1 \end{pmatrix} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}, \tau = \frac{1}{1-p}$$

$$\begin{pmatrix} 1 & 0 \\ (1-\varepsilon)d & d(\varepsilon-1)-\varepsilon \end{pmatrix} \begin{pmatrix} \tau_0 \\ \tau_1 \end{pmatrix} = \begin{pmatrix} 0 \\ (\varepsilon-1)-\varepsilon \end{pmatrix}, \tau = \frac{1}{(1-\varepsilon)(1-p)+\varepsilon}$$

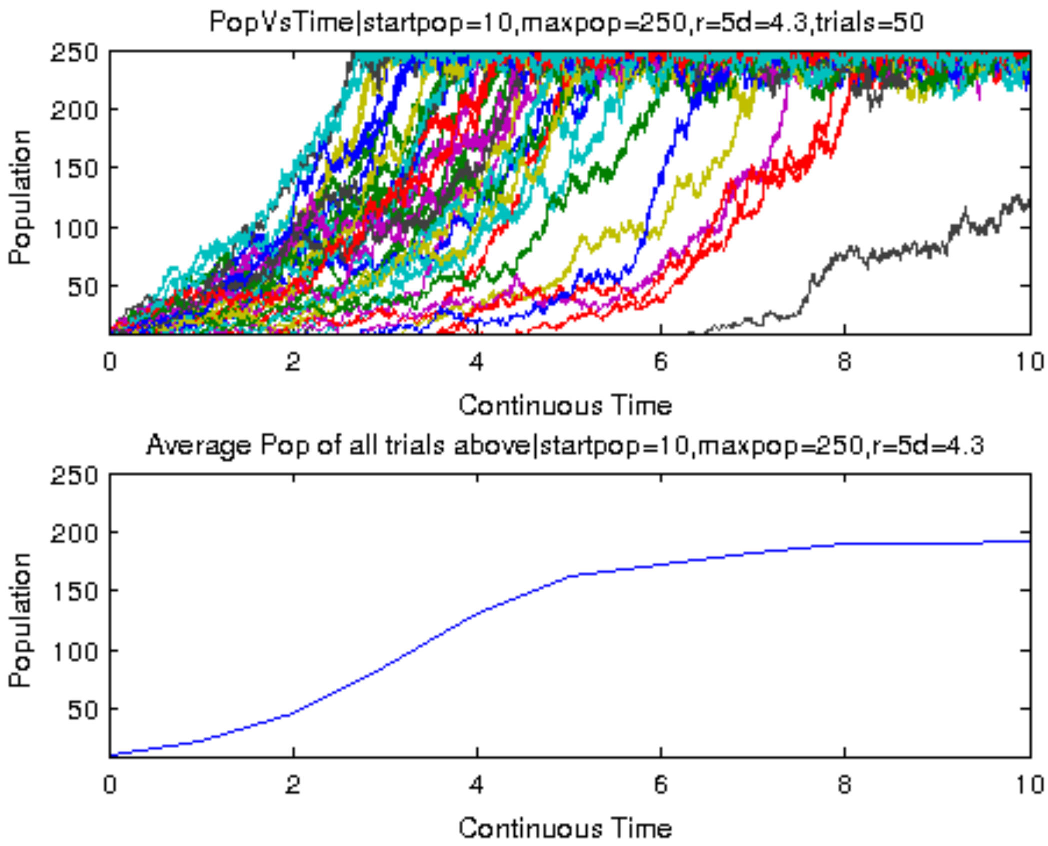


Gillespie

Possibly incorporate

$$\delta(t) = \begin{cases} 0 & t \neq 0 \\ \infty & t = 0 \end{cases}$$

$$\int_{t_1}^{t_2} dt\,\delta(t) = 1$$



IAS-PCMI 2014|Young's Tacking Problem

$$E(u) = \int_0^1 u(x)^2 dx + \int_0^1 (u'(x)^2 - 1))dx$$