Predicting Criticality and Dynamic Range in Complex Networks: Effects of Topology

[illegible][1,*] [illegible][2] [illegible][1]

[1]Department of Applied Mathematics, University of Colorado, Boulder, Colorado 80309, USA
[2]National Institutes of Health, National Institute of Mental Health, Bethesda, Maryland 20892, USA

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[illegible] [1,2] [illegible] [3] [illegible] dynamic range [illegible] [4] [illegible] [5] [illegible] [2]. [illegible] [2,4] [illegible] [6,7]. [illegible] [2] [illegible] x_i. [illegible] $x_i = 0$ [illegible] $x_i = 1$ [illegible] $x_i = 2, 3, \ldots, m-1$ [illegible] $t = 0, 1, \ldots$ [illegible] $x_i^t = 0$ [illegible] $x_j^t = 1$ [illegible] A_{ij} [illegible] $A = \{A_{ij}\}$ [illegible] $x_i^t \geq 1$ [illegible]

[illegible] $x_i^{t+1} = x_i^t + 1$ [illegible] $1 \leq x_i^t < m - 1$, [illegible] $x_i^{t+1} = 0$ [illegible] $x_i^t = m - 1$). [illegible] [2 [illegible] e es s se F a es s a a e be a . I a a , $\lim_{\square\to 0} F = 0$ $\square < 1$ a $\lim_{\square\to 0} F > 0$ $\square > 1$. I a , e a a e e e as be x a e a $\square = 1$ Te a a e e $\square$ s e e Re s. [2,4] a a ae ae b a a , e e e as $\square = \frac{1}{N}\sum_{i;j} A_{ij} = \langle$

e - a x e e s $\in [2.0; 6.0]$, a

e e ee e a s ; (ae 5) e s -

s e $\langle d \rangle = 1$, a ass a e e

a [0.7; 1.3]; (ae 6) e s e s

e e e e ee e e e

e e ae s , $A_{ij} = $ =d^{out}.

We ae e s - se s: s , e ae

b a e s ($A_{ij} \in \{0; 1\}$) a e e ee s b -

s a e s b b ; x , e ass e a e

e a , a a s a b ee

0 a ; a , e a ae

b ae s e e a s Re s. [2,7] a

a a s e a e a a e e a e

[7]. T e s

$\in [2{:}0\ 6{:}0]$, e $= 1$

a e a a e e a ae. Rs s s a-

(e s) e a a s e e E . (9) (e)

ae s F . 3.

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e s a e s e e a e $= 1$. T s e s s

M e e e

Pe

(see [19] a e e e s e e) s

Tae e e

e ae e e a s [4] e s s a e s s e

e e es e s a (1) e a b a e s e ae

≈ 1, a (2) a a s b e e s a e

a a e e e a e s e s a a

e e e e b a .

We a E O a De a Pe se s s-