Centrality and spectral radius in dynamic communication networks

Abstract. … 106 … 12.4 …

1 Introduction

(,1), l l l l
l l ,1 .
, l 1 ρ l fl
ll -
. l

2 Relaxed Communicability

2.2 B

( ),

A_i

$$(I-\alpha A_i)^{-1} \quad \sum_{k=0}^{1} \alpha^k A_i^k \qquad (\;)$$

( ) ,

$\alpha < \frac{1}{(A_i)}$ $\alpha < \frac{1}{\max(\;(A_i))}$, i $0, \ldots, M$ ( ).

, A_i, α

, ,

$A\ \alpha A$, 1 ( )- (( )-2 (1 -2 ( ) (( )-2

$l \in \mathbb{N}$ p p l , α ll l l

1 p l p l p

, . . l . , l

l , l p l p

ppl , l l α ( ) l, l b ll-

l pl α A_i l 2- A_i l .

p ll p n, p ll

pp , l A_i. l

l pl ll A_i . ll p , Q

l ( ) p α pl A $\frac{A}{kAk}$.

2.4

p p l

l - p p l

. $A_{i_1}, \cdots, A_{i_2}$

p l l -

l . , k, p Q_k, -

l 0 2 2. 0 ( ) / . 1 . 0 ((/)2 ( )- 2 . l 0)-2 0 (2 (

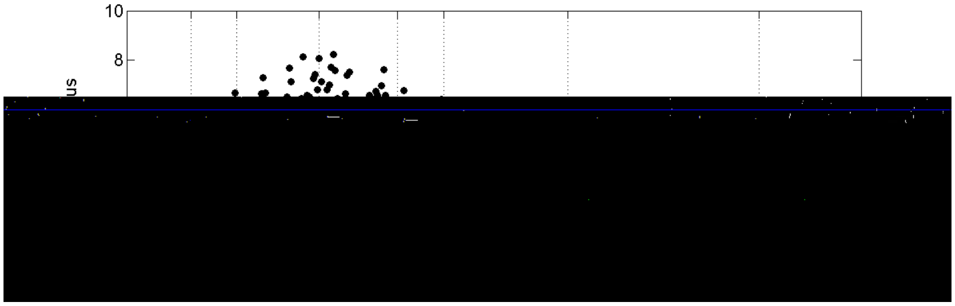

Fig. 2. MI A_1 A_{365} .

Fig. 3. MI : A ( ), 32.

Table 1. (, 1 106) .

	( )	( )
10	71	21
45	35	25
59	85	28
71	71	21

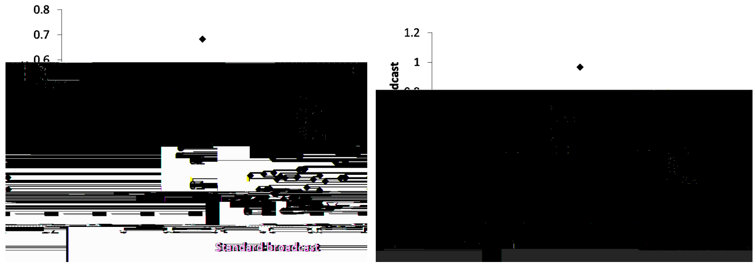

Fig. 4.

3.3

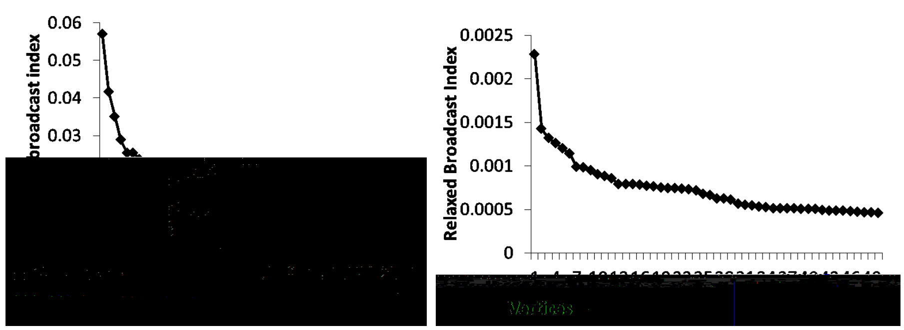

Fig. 5. 50

References

1. P. B . P : A . *American Journal of Sociology*, 92:1170 1182, 1987.
2. P. B P L . E - . *Social Networks*, 23(3):191 201, 2001.
3. P. B M G. E . A . *Social Networks*, 28(4):466 484, 2006.
4. . B . B : A . *Eur Sociol Rev*, 23(5):666 667, 2007.
5. C. C . P - . *Physical Review Letters*, 105:218701, 2010.
6. J. J. C D. J. H . G : D , . *Internet Mathematics (Special Issue on Biological Networks*, 2011.
7. K C . D P K. . . *Discrete Mathematics*, 281(1-3):149 161, 2004.
8. N. E , A. . P , D. L . I . *Proceedings of the National Academy of Sciences*, 106:15274 15278, 2009.
9. E. E N. H . C. . *Physical Review E*