Discrete Mathematics 48 (1984) 331
North-Holland

ADDENDUM TO "TREES IN RANDOM GRAPHS"

P. ERDÖS

Mathematics Institute of the Hungarian Academy of Sciences, Budapest, Hungary

Z. PALKA

Adam Mickiewicz University, Poznań, Poland

Received September 1983

The aim of this addendum is to explain more precisely the second part of the proof of Theorem 1 from our paper [1]. We need to show that a.e. graph $G \in \mathcal{G}(n, p)$ contains a maximal induced tree of order less than $(1+\varepsilon)\times (\log n)/(\log d)$. The second moment method used in our Lemma shows in fact that

$$\text{Prob}\{0.9\,E(X_r) < X_r < 1.1\,E(X_r)\} = 1 - o(1). \tag{1'}$$

Now let S_r stand for the number of $(1, r)$-stars that are not maximal trees. Then

$$E(S_r) \leq n\binom{n-1}{r} p^r q^{\binom{r}{2}} (n-r-1)(r+1)pq^r = o(E(X_r)),$$

if r is given by (1). Therefore

$$\text{Prob}\{S_r > 0.1\,E(X_r)\} = o(1),$$

which together with (1′) implies that a.e. graph $G \in \mathcal{G}(n, p)$ contains at least one maximal induced star of order $r+1$.

Acknowledgement

We wish to express our thanks to Professor Joel Spencer for his stimulating comments.

Reference

[1] P. Erdös and Z. Palka, Trees in random graphs, Discrete Mathematics 46 (1983) 145–150.

0012-365X/84/$3.00 © 1984, Elsevier Science Publishers B.V. (North-Holland)