

Zbl 194.25401

**Elliott, P.D.; Erdős, Pál**

*Some matching theorems* (In English)

**J. Indian Math. Soc., n. Ser. 32, 215-219 (1968).**

The authors give the following improvements of an earlier result of the first author [Mathematika, London 13, 23-25 (1966; Zbl 144.00504)].

Theorem 1. Let  $G$  be an even (i.e. bipartite) graph of type  $(n, n)$  and suppose that  $G$  has at least  $(1/2 + c)n^2$  edges, and has at least one matching. Then  $G$  has at least (1)  $2^\mu \mu!$  distinct matchings, where (2)  $\mu = [1/2m]$ ,  $m \geq \alpha n$ ,  $\alpha = 1 - (1 - 2c)^{1/2}$ , and  $m$  is an integer. In particular, if  $c$  is fixed and  $n$  large, the number of distinct matchings exceeds  $(n!)^{c_1}$  where  $c_1 > 0$  depends only upon  $c$ .

Theorem 2. Let  $G$  satisfy the hypotheses of Theorem 1 with  $2c > \sqrt{3} - 1$ . Then  $G$  has at least  $m!$  distinct matchings where  $m$  is an integer satisfying  $m + 1 \geq n(2c - (2 - 4c)^{1/2})$ .

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Classification:

05C70 Factorization, etc.