1086-05-1043 **Gerard D. Cohen***, cohen@enst.fr, and **Emanuela Fachini** and **Janos Korner**. *Connector families of graphs.*

For every pair of fixed natural numbers $k > l$ we consider families of subgraphs of the complete graph K_n such that each graph in the family has at least k connected components while the union of any two has at most l. We show that the cardinality of such a family is at most exponential in n and determine the exact exponential growth of the largest such families for every value of k and $l = 1$.

Let $C(k) = C(k, n)$ be the family of those subgraphs of K_n which have at least $k > 1$ connected components. We say that a family $G \subseteq C(k, n)$ is a *connector family* if the union of any two of its members is connected. We are interested in the largest cardinality of a connector family, asymptotically in n and as a function of k. Let D be the family of all the connected graphs. Let the largest cardinality of a connector family be $M(C(k, n), D)$. We have

Theorem

For every $k > 0$ the largest size $M(C(k, n), D)$ of a connector family is exponential in n and the asymptotic exponent is

$$\lim_{n\to\infty} \log \sqrt[n]{M(C(k,n),D)} = h\left(\frac{1}{k}\right),$$

where $h : [0, 1] \to [0, 1]$ is the binary entropy function. (Received September 18, 2012)