

**Tuza, Zsolt**

**$C_4$ -saturated graphs of minimum size.** (English) Zbl 0719.05040  
*Acta Univ. Carol., Math. Phys.* 30, No. 2, 161-167 (1989).

Let  $F$  be a given simple graph. Call a graph  $G$   $F$ -saturated if  $F$  is not a subgraph of  $G$ , but a subgraph isomorphic to  $F$  appears whenever a new edge is added to  $G$ . Denoting by  $V(G)$  and  $E(G)$  the set of vertices and edges, respectively, of  $G$ , define  $sat(n, F) = \min\{|E(G)| : |V(G)| = n, G \text{ is } F\text{-saturated}\}$ , the minimum number of edges in an  $F$ -saturated graph on  $n$  vertices. The problem is to determine  $sat(n, F)$  for given  $F$  and  $n$  (possibly when  $n$  is large), and to describe the graphs  $G$  with  $n$  vertices and  $sat(n, F)$  edges, namely the extremal graphs, that are  $F$ -saturated. Denote  $C_4$  the cycle on 4 vertices. In his earlier paper, the author proves that for  $n \geq 5$ ,  $sat(n, C_4) = \lfloor (3n - 5)/2 \rfloor$ , moreover describes the extremal graphs; in this paper he gives a shorter argument.

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**MSC:**

[05C35](#) Extremal problems in graph theory

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