Min-Max and Max-Min Graph Saturation Parameters

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If P is a hereditary property concerning subsets of the vertex set of a graph G, we define the following four parameters $\lambda_p(G)$, $\Lambda_p(G)$, $\lambda_p^{M,m}(G)$, $\Lambda_p^{m,M}(G)$ as follows.

$$\lambda_p(G) = \min\{|S| : S \text{ is a maximal } P\text{-set}\}.$$

$$\Lambda_p(G) = \max\{|S| : S \text{ is a maximal } P\text{-set}\}.$$

For any $v \in G$, let

$$\lambda_p^{min}(v, G) = \min\{|S| : v \in S \text{ and } S \text{ is a maximal } P\text{-set}\}$$

and let

$$\lambda_p^{M,m}(G) = \max\{\lambda_{min}(v, G) : v \in V\}.$$

Similarly one can define the min-max parameter $\Lambda_p^{m,M}$. In a similar way we can define four parameters corresponding to a super hereditary property P. In this talk we give a brief survey of results on these parameters for various graph theoretic properties.