

## ABSTRACT

Let  $f$  be a graph parameter and  $\mathcal{G}(m, n)$  be the set of all graphs of order  $n$  and size  $m$ . If we have known that  $f$  is an interpolation graph parameter over  $\mathcal{G}(m, n)$ , then the values of  $f$  completely cover a line segment  $[a, b]$  of positive integers. Thus for a graph of order  $n$  and size  $m$ , two invariants  $a$  and  $b$  when

$$a = \min(f; m, n) = \min\{f(G) : G \in \mathcal{G}(m, n)\} \quad \text{and}$$

$$b = \max(f; m, n) = \max\{f(G) : G \in \mathcal{G}(m, n)\},$$

arise naturally. And also,  $f$  is an interpolation graph parameter over  $\mathcal{CG}(m, n)$  where  $\mathcal{CG}(m, n)$  is the subset of  $\mathcal{G}(m, n)$  consisting of all connected graphs, we can find  $A$  and  $B$  as:

$$A = \text{Min}(f; m, n) = \min\{f(G) : G \in \mathcal{CG}(m, n)\} \quad \text{and}$$

$$B = \text{Max}(f; m, n) = \max\{f(G) : G \in \mathcal{CG}(m, n)\},$$

In this thesis we study the interpolation property for six graph parameters, namely the clique number, the independence number, the vertex covering number, the chromatic number, the matching number, and the edge covering number over  $\mathcal{G}(m, n)$  and  $\mathcal{CG}(m, n)$ . We also find the minimum and maximum value for the graph parameter  $f$ ,  $f \in \{\omega, \alpha_0, \beta_0, \chi, \alpha_1, \beta_1\}$ . With this property and those values, we know all possible values of those graph parameters of a given graph.