

# VERTEX COUNTING USING WEIGHTS AND DISCHARGES

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A dominating set of a graph is a set of vertices such that every vertex not in the set is adjacent to a vertex in the set and a total dominating set of a graph is a set of vertices such that every vertex is adjacent to a vertex in the set. Much work has been done in the literature on establishing bounds for various domination-type parameters. In this talk, we present a method of counting vertices by assigning weights to vertices and edges and then applying a list of discharging rules. We demonstrate the usefulness of the method, particularly for cubic graphs, by outlining a number of new results. Notably, the first of these proves the published conjecture in [1] that a connected claw-free cubic graph of order  $n \geq 10$  always contains a total dominating set of size at most  $4n/9$ .

**Keywords:** bounds, domination, total domination.

**AMS Subject Classification:** 05C69.

## References

- [1] O. Favaron and M. A. Henning, Bounds on total domination in claw-free cubic graphs. *Discrete Math.* **308** (2008), 3491–3507.

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