The Second Common Neighborhood Conjecture

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Abstract

The Second Common Neighborhood Conjecture is a question about the structure of shared neighbors in a graph. At first glance, it seems like a nice problem for a new researcher to study: it requires only a basic understanding of graph theory to state, examples are easy to understand, and one can quickly prove the conjecture holds in certain cases. However, the full conjecture remains stubbornly unsolved. If true, the conjecture immediately improves the best known bound in a problem in enumerative graph theory. We will introduce the conjecture and look at some of the cases where it is known to hold.

Keywords: graph, enumeration.