Abstract:

Finding the watchman's walk of a graph \( G \) is a variation of the graph domination problem. To dominate a graph, a set \( S \) of vertices must be found such that every vertex in the graph is either in \( S \), or is a neighbour of a vertex of \( S \). Our goal becomes finding the smallest dominating set possible. In the watchman's walk problem, instead of finding an arbitrary set \( S \), we look for a dominating walk through the graph, and of all such walks, the shortest walk. Unlike similar problems, such as the Traveling Salesman Problem, a watchman's walk exists in every graph. In this talk, we will review some results to get a sense of what the watchman's walk is (and isn't), and examine the problem of enumerating these walks.