MATH COLLOQUIUM SERIES

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ON k–STEP HAMILTONIAN GRAPHS

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Background. Noor A'lawiah binti Abd Aziz recently joined School of Mathematical Sciences, Universiti Sains Malaysia as a faculty member. She received her PhD degree in mathematics from Universiti Sains Malaysia (USM) in 2021. Her PhD research focused on the class of k–step Hamiltonian graphs. She is interested to explore more on the properties and characterizations of k–step Hamiltonian graphs in terms of different graph parameters.

Abstract. A graph G with n vertices is said to be $AL(k)$–traversable for an integer $k \geqslant 1$ if there exists a sequence of vertices $v1,v2,...,vn$ such that the distance between any two consecutive vertices in the sequence is k, i.e., $d(vi,vi+1) = k$ for each $i = 1,2,...,n-1$. The sequence $v1,v2,...,vn$ is called an $AL(k)$–traversal of G. If $d(v1,vn) = k$, then G is said to be k–step Hamiltonian and $v1,v2,...,vn,v1$ is called a k–step Hamiltonian cycle of G. In this talk, we give an introduction to k–step Hamiltonian graphs. Then, we present our contributions to the study of k–step Hamiltonian graphs. Our contributions include two constructions, namely A–construction, one that produces, from a k–SH graph, a new k–SH graph, and B–construction, one that produces, from a k–SH graph a $(k+1)$–SH graph. The independence number, chromatic number and clique number of graphs are fundamental parameters in graph theory. Since obtaining the exact value of these parameters are very challenging in general, it is natural for researchers to focus on finding bounds when dealing with these parameters. Our results also include several bounds for the independence number, the chromatic number and the clique number of k–step Hamiltonian graphs.

Date: 6 October 2021 (Wednesday)
Time: 3:30-4:30 PM (Malaysia time)
Link: https://bit.ly/3unlafo (Via Webex)

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