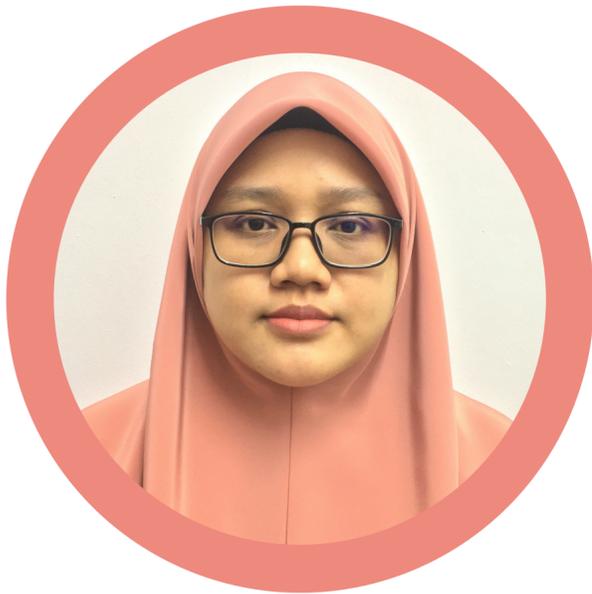


A GRAPH POLYNOMIAL ASSOCIATED TO SOME GRAPHS OF CERTAIN FINITE NONABELIAN GROUPS

DR NABILAH NAJMUDDIN

SCHOOL OF MATHEMATICAL SCIENCES, UNIVERSITI SAINS MALAYSIA



Background. Dr Nabilah Najmuddin newly joined the School of Mathematical Sciences, Universiti Sains Malaysia as a lecturer in September 2021. She obtained her BSc (Hons) (Mathematics) from Universiti Sains Malaysia in 2013 and her MSc (Mathematics) from Universiti Kebangsaan Malaysia in 2015. Recently, she received her PhD in Mathematics from Universiti Teknologi Malaysia under the great supervision of Prof Dr Nor Haniza Sarmin and Prof Dr Ahmad Erfanian from Ferdowsi University of Mashhad, Iran. Her PhD research focused on the graph polynomials and their roots established for certain types of graphs of some finite nonabelian groups. She published in several indexed journals and conference proceedings. She is extending her research in determining graph polynomials for many other types of graphs in group theory and is interested to explore more on the characterization of the group properties by using the graph polynomials.

Abstract. Graph polynomials are studied to analyse various aspects of combinatorial graph invariants and characterizing the structure concerning graphs. The graph polynomials, such as the independence polynomial, the clique polynomial, and the domination polynomial, have been studied for numerous types of graphs in graph theory, such as the complete graph, the wheel graph and the star graph. Meanwhile, the algebraic properties of the groups from group theory can be represented by graph structures and usually correspond to certain types of graphs from graph theory. In association between the study of graphs with groups, the graph polynomials have just started being considered to be determined for the graphs associated to groups. This presentation focuses on a type of graph polynomial, namely the independence polynomial. An independence polynomial of a graph is the polynomial whose coefficients represent the number of independent sets of the graph. The independence polynomials are computed for two types of graphs associated to two finite nonabelian groups, by using some existing properties related to the graph polynomials. The graphs included are the conjugate graph and the center graph associated to the dihedral group and the generalized quaternion group. Those independence polynomials are obtained in their general forms, and then, their roots are also determined.

Date: 6 October 2021 (Wednesday)

Time: 2:30-3:30 PM (Malaysia time)

Link: <https://bit.ly/3unlafo> (Via Webex)

