AAAG MONTHLY MEETING & SEMINAR
SEMESTER II, 2018/2019

Day/Date : Tuesday, 5 March 2019
Time : 2.30 PM – 4.00 PM
Venue : Computer Laboratory 2, Level 3, C22 Faculty of Science.

TENTATIVE SCHEDULE

Time (PM)	Speakers
2.30 – 2.40	Welcoming Speech by AAAG Research Group Leader, Assoc. Prof. Dr. Nor Muhainiah Mohd Ali
2.40 – 3.00	**"PROBABILISTIC CHARACTERIZATIONS OF SOME RING OF MATRICES AND ITS ZERO DIVISOR GRAPH"** Presenter: Nurhidayah Zaid Supervisors: Prof. Dr. Nor Haniza Sarmin (Main), Dr Sanhan Muhammad Salih Khasraw (Co)
3.00 – 3.20	**"ORDER PRIME GRAPHS OF SOME FINITE GROUPS"** Presenter: Muhammed Bello Supervisor: Assoc. Prof. Dr. Nor Muhainiah Mohd Ali
3.20 – 3.40	**"FINDING THE ZEROS OF THE AHLFORS MAP FOR SOME SELECTED REGIONS"** Presenter: Nur Hazwani Aqilah Abdul Wahid Supervisor: Prof. Dr. Ali Hassan Mohamed Murid (Main), Assoc. Prof. Dr. Mukhiddin I. Muminov (Co)
3.40 – 4.00	Refreshment

Organised by
Applied Algebra and Analysis Group (AAAG),
Frontier Materials Research Alliance
Universiti Teknologi Malaysia, Johor Bahru, Johor
www.science.utm.my/AAAG

ABSTRACT

PROBABILISTIC CHARACTERIZATIONS OF SOME RING OF MATRICES AND ITS ZERO DIVISOR GRAPH

Nurhidayah Zaid
Department of Mathematical Sciences, Faculty of Science
Universiti Teknologi Malaysia
81310 UTM Johor Bahru, Johor
edayahzaid@yahoo.com

Supervisors:
Prof. Dr. Nor Haniza Sarmin
Department of Mathematical Sciences, Faculty of Science
Universiti Teknologi Malaysia
81310 UTM Johor Bahru, Johor
nhs@utm.my

Dr Sanhan Muhammad Salih Khasraw
Department of Mathematics, College of Education,
Salahaddin University – Erbil, Iraq
sanhan.khasraw@su.edu.krd

Abstract

Probability theory is a branch of mathematics which has been discussed widely in group theory. For example, commutativity degree is the probability that two randomly selected elements from a group commute. This concept is used to determine the abelianness of a group. This idea has been applied in various types of group and has also been generalized in many ways. However, in ring theory, concepts involving probability theory is not commonly discussed. In this presentation, the focus is in obtaining the probability that two random elements chosen from a ring have product zero. The ring considered in this presentation is the ring of 2 by 2 matrices over $\mathbb{Z}_2$. To obtain the probability, the zero divisors of the rings considered need to be first determined. Then, the results are used to construct the zero divisor graph, a graph where its vertices are the zero divisors and two vertices are adjacent if and only if the product of the zero divisors is zero.

Keywords: Ring theory, zero divisor, probability, commutativity degree, zero divisor graph

ABSTRACT

ORDER PRIME GRAPHS OF SOME FINITE GROUPS

Muhammed Bello
Department of Mathematical Sciences, Faculty of Science
Universiti Teknologi Malaysia
81310 UTM Johor Bahru, Johor
mbatap560@gmail.com

Main Supervisor:
Assoc. Prof. Dr. Nor Muhainiah Mohd Ali
Department of Mathematical Sciences, Faculty of Science
Universiti Teknologi Malaysia
81310 UTM Johor Bahru, Johor
normuhainiah@utm.my

Abstract

The study of algebraic structures using the concept of graph theory has become more influential tool for solving problems in mathematics. This concept has been used in classifying groups in terms of graph theoretical concepts by defining a graph corresponding to groups and study its properties from the geometric structure. Since the algebraic properties of group can be explored through the relationship among its elements, we therefore, propose to define some graphs that combine the properties of some of the graphs in the literature, which will enable us to study various properties of the group in terms of the geometrical properties of the graph.

Keywords: Order product prime graph, Order of an element, Vertex adjacency

ABSTRACT

FINDING THE ZEROS OF THE AHLFORS MAP FOR SOME SELECTED REGIONS

Nur Hazwani Aqilah Abdul Wahid
Department of Mathematical Sciences, Faculty of Science
Universiti Teknologi Malaysia
81310 UTM Johor Bahru, Johor
hazwani_qlh@yahoo.com

Supervisors:
Prof. Dr. Ali Hassan Mohamed Murid
Assoc. Prof. Dr. Mukhiddin I. Muminov
Department of Mathematical Sciences, Faculty of Science
Universiti Teknologi Malaysia
81310 UTM Johor Bahru, Johor
alihassan@utm.my
mukhiddin@utm.my

Abstract

The Ahlfors map is a conformal mapping function that maps a multiply connected region onto a unit disk. It is a generalization of the Riemann map for a simply connected region. It is known that the Ahlfors map can be written in terms of the Szegö kernel. The Szegö kernel plays an important role in conformal mapping and satisfies a boundary Kerzman-Stein integral equation. The zeros of the Ahlfors map are basically the zeros of the Szegö kernel. The exact zeros of the Ahlfors map are unknown except for the annulus region. In this research, some known and new methods for computing the zeros of the Ahlfors map for some selected regions with smooth boundaries will be presented. Some numerical examples are also included.

Keywords: Multiply connected regions, Ahlfors map, Szegö kernel, Integral equation method, Zeros of Ahlfors map