

PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON MATHEMATICS AND ITS APPLICATIONS (ICMA-2024)

13TH DECEMBER-2024

BOOK OF ABSTRACTS



Organized by
PG & RESEARCH DEPARTMENT OF MATHEMATICS
Periyar Arts College,
Cuddalore-607 001, Tamilnadu, India

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About the College

Periyar Arts College is situated on the shore of Bay Bengal at Devanampattinam village, 200 km south of Chennai on the East Coast Road. The College has been named after "Thanthai Periyar" E.V. Ramasamy, the Great rationalist and social reformer. The college is fully funded and managed by Government of Tamil Nadu. Periyar Government Arts College was started in 1964 at Cuddalore. Initially 360 students were admitted in four different branches in the Pre-University course. In its inception, the college functioned in the District Board Buildings and then the Hon'ble Chief Minister of Madras Thiru M. Bakthavasalam inaugurated the college on 06.09.1964. In 2005, Periyar Arts College was accredited by NAAC accreditation with C++ in the first cycle. On 3 March, 2015, in the process of NAAC Re-accreditation, Periyar Government Arts College has secured 'B' Grade status with 2.43 CGPA. All the departments are equipped with LCD Projector. Besides, seven Departments have been provided with smart boards - the facility enhanced the quality of teaching and learning. Based on the growing demands and needs of the students research programmes M.Phil. and Ph.D. in Botany, Chemistry, Commerce, Computer Science, English, Mathematics, Physics, History, Tamil and Zoology have been introduced. In 2022, the college boasts to have grown as the largest college in Cuddalore District with a student strength of 5000+ students and 20 departments. Periyar Arts College was initially affiliated with University of Madras and then affiliated to Thiruvalluvar University. From 2021 the college is affiliated to Annamalai University, Chidambaram.

About the Department

The Department of Mathematics was established in 1965. Under Graduate Mathematics course was started in the year 1965, later it was upgraded as Post graduation course in the year 2005. Now the department flourishes with 274 students. It offers B.Sc., M.Sc., and Ph.D (full time/part time). Many students passed out from this department pursued higher education and holding various positions in private and Government sectors. A major project is ongoing which is a added feather to the cap of the Mathematics department. The Curriculum of B.Sc., Mathematics & M.Sc., Mathematics allows to setup a Computer Oriented Mathematics Lab with Suitable Programming in C language, R-Programming, SCILAB, MATLAB, Programming in C++, for doing practical Mathematics.



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a graph G is called the locally harmonious chromatic number of G and is denoted by $h_1(G)$. In this paper, we investigate the locally harmonious chromatic number of slim tree, hypertree, shuffle hypertree and l -complete binary tree.

AMS Classification Number: 05C69, 05C78

Keywords: coloring; locally harmonious coloring; slim tree; hypertree; shuffle hypertree; l -complete binary tree.

Manuscript ID: ICMA-P022

Equitable Dominator Coloring of Splitting Graph of Certain Graph

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Abstract: A equitable dominator colouring of a graph G is a proper coloring of G in which every vertex dominates every vertex of at least one colour class and the cardinalities of the color classes differ by at most one the minimum number of colors required for a dominator colouring of G is called the equitable dominator chromatic number of G and it's is denoted by $\chi_{ed}(G)$ in this paper, we determine the dominator chromatic number of splitting graphs of some certain classes of graph.

Keywords: Dominator coloring, Chromatic number, Dominator chromatic number, Splitting Graph, complete graph, Star graph, Ladder Rung Graph, Banana tree, Sun let graph, Comb Graph.

Manuscript ID: ICMA-P023

Oscillatory Rotating Convection in a Couple-Stress Fluid with Chemical Reaction and Helical Force Effects

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Abstract: This study investigates oscillatory rotating convection in a couple-stress fluid subjected to chemical reaction and helical force effects. The governing equations for the couple-stress fluid are derived, incorporating the effects of rotation, thermal gradients, chemical reaction, and helical force. The problem is analyzed under the framework of linear stability theory, with an emphasis on the onset of convection and the impact of each parameter on the stability characteristics of the system. The chemical reaction is modeled using a first-order irreversible reaction, and the helical force is assumed to introduce additional complexity to the flow dynamics. The stability criteria are obtained by solving the eigenvalue problem for the system, and the effect of various factors such as the rotation rate, couple-stress parameters, chemical reaction rate, and helical force intensity on the oscillatory convection pattern are discussed. Numerical results show that the presence of the couple-stress fluid, chemical reaction, and helical force significantly alter the convection thresholds and the onset of oscillatory convection. The findings provide insights into the complex interactions between fluid mechanics, chemical processes, and external forces, which are of practical importance in applications such as geophysical flows, industrial reactors, and bioengineering systems.