



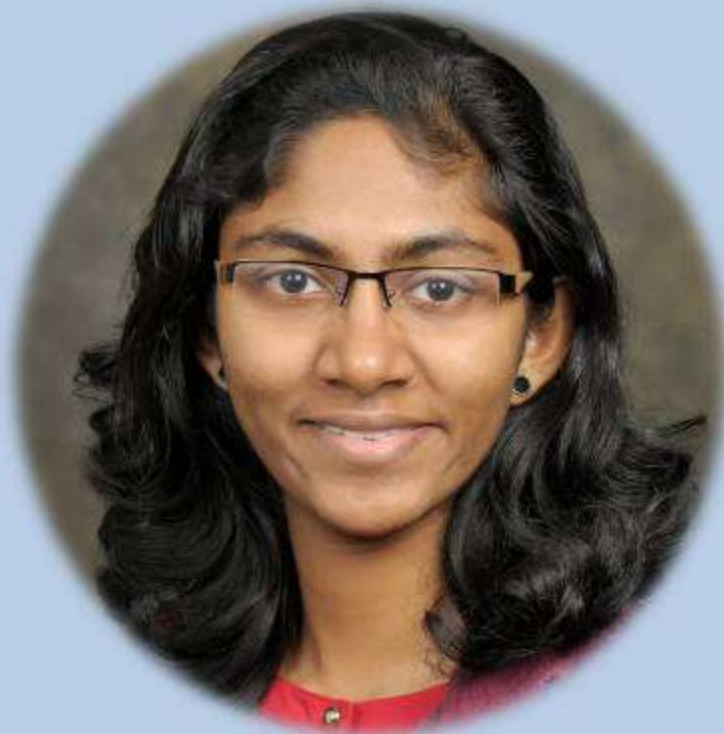
MATHEMATICS COLLOQUIUM

Department of Mathematics
Faculty of Science
University of Peradeniya

A glimpse of combinatorial design theory

Abstract

Combinatorial design theory is the study of arranging elements of a finite set into patterns (subsets, words, arrays) according to specified rules such as balance and/or symmetry. The origins of combinatorial design theory date back to the 18th century and are rooted in recreational mathematics (brain-teasers, mathematical puzzles), such as the so-called “36 officers problem” by Euler in 1782. A graph is a mathematical abstraction of a network. Similarly, a group is the mathematical abstraction of the symmetry of an object. The characterization of designs in terms of their associated groups have attracted considerable interest over the past decades. In this talk I will discuss our recent results related to two types of designs, namely block designs and star designs, and how to interpret them using graph theoretic and group theoretic tools.



Dr. Ajani De Vas Gunasekara

B.Sc.(Perad.), M.Sc.(UCF., USA), Ph.D.(Monash Uni., AUS.)

Dr. Ajani De Vas Gunasekara recently obtained her Ph.D. in Mathematics at the Monash University, Australia, under the supervision of Prof. Daniel Horsley. Her research interests lie in Discrete Mathematics. Her current research project mainly focuses on combinatorial design theory. She was awarded Monash University Postgraduate Publication Award in 2022. Dr. Ajani obtained her master's degree in Mathematics from the University of Central Florida, USA, and received the Mathematics Master's thesis award for her research project. She received her bachelor's degree (Specialized in Mathematics) from the University of Peradeniya, Sri Lanka. She has published several journal articles and conference abstracts related to her field and would like to contribute both in teaching and research.

Date: Thursday, 13th of October 2022

Time: 12.00 noon – 1.00 p.m.

Venue: Mathematics Lecture Theatre



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