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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

PHD STUDENT SEMINAR

Perfect Divisions in ($P_2 \cup P_4$, bull)-free Graphs

By

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Abstract

In graph colouring, perfect divisibility is a powerful structural property: a graph can be partitioned into a perfect induced subgraph and one with a strictly smaller clique number. Crucially, perfectly divisible graphs guarantee a quadratic chromatic bound. Motivated by recent efforts to classify such graphs, this seminar explores the structure of bull-free graph families. We present our recent theorem generalising previous results: every ($P_2 \cup P_4$, bull)-free graph with $\omega(G) > 2$ and no homogeneous set admits a perfect division. We will also discuss the tightness of this condition and our short proof for the perfect divisibility of (P_5, bull)-free graphs, originally established by Chudnovsky and Sivaraman.

Date : 29 April 2026, Wednesday

Time : 2:00pm

Venue : Room 4472 (Lifts 25/26)

All are Welcome!