THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON PURE MATHEMATICS

Optimal RS Codes and GRS Codes Against Adversarial Insertions and Deletions and Optimal Constructions

by

Dr. Jingge LIU

School of Cyber Science and Technology, Hubei University

Abstract

In recent years, since insertion-deletion (insdel for short) errors appeared in high-density storage systems and wireless communication systems, insdel codes has been widely used in DNA storage, DNA analysis, language processing and race-track memory error correction. In this talk, we study the optimal RS codes and GRS codes with respect to the half-Singleton bound and the strict half-Singleton bound, respectively. We first provide an improved explicit construction of optimal RS codes that meet the half Singleton bound. This explicit construction can obtain optimal RS codes of longer lengths than previous studies. Then we focus on the optimal GRS codes with respect to the strict half-Singleton bound. We prove the existence of such codes and provide an explicit construction of such codes over much larger fields.

Date : 07 January 2025 (Tuesday)
Time : 11:00a.m. – 12:00noon
Venue : Room 4503 (Lifts 25/26)

All are Welcome!