THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON PURE MATHEMATICS

On the Nonexistence of Generalized Bent Functions

by

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Abstract

An (m, n)-generalized bent function is a function from $\mathbb{Z}_2^n$ to $\mathbb{Z}_m$ so that its associated Fourier transformations have constant absolute value. It is known that an (m, n)-generalized bent function exists whenever one of the following holds:

(1) both m and n are even.

(2) $4 \mid m$.

On the other hand, all known results suggest that for (m, n) pair that fails to satisfy both of the above conditions, (m, n)-generalized bent function does not exist. In this talk, we will discuss the recent nonexistence result of $(m, 4)$ generalized bent functions with m being odd. This result crucially relies on analyzing vanishing sums of complex roots of unity.

This is joint work with Ka Hin Leung (National University of Singapore) and Songtao Mao (Johns Hopkins University).

Date : 19 December 2024 (Thursday)

Time : 11:00a.m.-12:00noon

Venue : Room 1410 (Lift 25 & 26)

All are Welcome!