

THE UNIVERSITY



OF HONG KONG

*Institute of Mathematical Research
Department of Mathematics*

PROBABILITY AND INFORMATION THEORY SEMINAR

On unitary block designs and their codes

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Abstract

A unital, or a unitary block design, of order $n > 2$, is a $2 - (n^3+1, n+1, 1)$ design. Low-density parity check (LDPC) code can be constructed by taking the incidence matrix of a unitary block design as the parity-check matrix of the code. I will introduce the classical unital, which is the design defined by a hermitian curve in the projective plane $P_2(F_{q^2})$ over the finite field F_{q^2} , and study its incidence matrix. Some conjectures and theorems concerning the characterizations of the classical unital will also be presented.

Date: March 27, 2014 (Thursday)

Time: 11:30am – 12:30pm

Place: Room 206, Run Run Shaw Bldg., HKU

All are welcome