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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

MATHEMATICS COLLOQUIUM

Error-Correcting Codes: A Glimpse at Cyclic and Quasi-Cyclic Codes

By

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Abstract

The theory of error-correcting codes is a technique of introducing redundancy to data, in order to enable the correction of errors that occur in the storage or transmission of such data. Pioneered by Richard Hamming, who invented the first error-correcting code in 1950, the field has seen tremendous progress fueled sometimes by clever use of mathematical tools (and, of course, strong motivation arising from real-world applications).

One of the most elegant examples of error-correcting codes, which incorporates nice mathematics and compelling engineering considerations, is the class of cyclic codes. Cyclic codes have also been among the block codes most commonly used in applications. Mathematically, cyclic codes may be generalized in several different ways, one of which is the class of quasi-cyclic (QC) codes. Interesting mathematics has found its way to shedding light on QC codes, which have also seen increasing application to real-life problems in recent years.

In this talk, we shall give an introduction of these classes of codes, together with some of the mathematical ideas, especially ones in algebra, that have led to a deeper understanding of such codes.

Date : 28 November 2025 (Friday)
Time : 3:00p.m.-4:00p.m.
Venue : Lecture Theatre F (near Lift 25/26)

All are Welcome!