



**THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY**

**Department of Mathematics**

**SEMINAR ON PURE MATHEMATICS**

**A new construction of  
non-Reed-Solomon MDS codes**

by

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**Abstract**

MDS codes have garnered significant attention due to their wide applications in practice. To date, most known MDS codes are equivalent to Reed-Solomon codes. The construction of non-Reed-Solomon (non-RS) type MDS codes has emerged as an intriguing and important problem in both coding theory and finite geometry. Although some constructions of non-RS type MDS codes have been presented in the literature, the parameters of these MDS codes remain subject to strict constraints. In this report, we introduce a new general construction of  $[n, h]$  MDS codes based on the idea of selecting suitable evaluation polynomials for evaluation points such that all nonzero polynomials have at most  $k - 1$  zeros in the set of evaluation points. Moreover, these MDS codes can be proved to non-Reed-Solomon codes by computing their Schur squares. Explicit constructions of such non-RS MDS codes can be converted to combinatorial problems and hence non-RS MDS codes with large length can be obtained.

**Date : 28 August 2025 (Thursday)**

**Time : 3:00p.m.-4:00p.m.**

**Venue : Room 4504 (Lift 25/26)**

*All are Welcome!*