



The 10th International Coding Theory Seminar (10th ICTS)

Thailand (online)

April 24, 2026

Department of Mathematics, Faculty of Science
Silpakorn University Sanam Chandra Palace Campus, Nakhon Pathom, Thailand

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Organizing committee

China

Xiwang Cao (Nanjing University of Aeronautics and Astronautics)

Lingfei Jin (vice chair, Fudan University)

Hongwei Liu (chair, Central China Normal University)

Gaojun Luo (Nanjing University of Aeronautics and Astronautics)

India

Manish K. Gupta (chair, Kaushalya: The Skill University)

Sartaj Ul Hasan (Indian Institute of Technology Jammu)

Anuradha Sharma (IIIT-Delhi)

Japan

(TBA)

Korea

Whan-Hyuk Choi (Kangwon National University)

Boran Kim (Kyungpook National University)

Jon-Lark Kim (chair, Sogang University)

Philippines

Rowena Betty (University of the Philippines Diliman)

Romar dela Cruz (University of the Philippines Diliman)

Lucky Galvez (chair, University of the Philippines Diliman)

Singapore

Martianus Frederic Ezerman (chair, Nanyang Technological University)

Thailand

Arunwan Boripan (Ramkhamhaeng University)

Parinyawat Choosuwan (Rajamangala University of Technology Thanyaburi)

Somphong Jitman (chair, Silpakorn University)

Ekkasit Sangwisut (Thaksin University)

International advisors

Nathan Kaplan (University of California, Irvine, USA)

Patrick Sole (Aix-Marseille Universite, France)

Hong-Yeop Song (Yonsei University, Korea)

Chaoping Xing (Shanghai Jiao Tong University, China)

Local organizing committee

Somphong Jitman (Silpakorn University, Thailand)

Sawanya Sakuntasathien (Silpakorn University, Thailand)

Chanakan Teppakorn (Silpakorn University, Thailand)

Chalermpong Worawannotai (Silpakorn University, Thailand)

Program

All times listed are in Bangkok Time (GMT+7).

Date: April 24, 2026

Time (GMT+7)	Activities
11:15 – 11:45 AM	ICTS Committee Discussion
11:50 – 11:59 AM	Inauguration Jon-Lark Kim <i>Sogang University, South Korea</i>
12:00 – 12:45 PM	Interplay between Matrices, Codes, and Graphs over Finite Commutative rings Siripong Sirisuk <i>Thammasat University, Thailand</i>
12:45–1:00 PM	Discussion/Break
1:00–1:45 PM	Algebraic Structures Behind Constacyclic Codes: From Polynomial Factorization to a Systematic Theory Chakkrid Klin-eam <i>Naresuan University, Thailand</i>
1:45–2:00 PM	Discussion/Break
2:00–2:45 PM	Good Integers and Applications in Coding Theory Somphong Jitman <i>Silpakorn University, Thailand</i>
2:45–3:00 PM	Discussion/Break
3:00 PM	Closing Seminar

Talk 1: Interplay between Matrices, Codes, and Graphs over Finite Commutative rings



Siripong Sirisuk

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Abstract

This talk presents results on the interplay between matrices, codes, and graphs over finite commutative rings. First, matrix graphs over finite principal ideal rings are introduced, where adjacency is defined via rank conditions, and independent sets correspond to maximum rank distance (MRD) codes. Next, the connection between matrices and codes is explored through enumeration techniques for counting matrices and free linear codes over finite commutative rings. In particular, counting formulas for free linear codes with prescribed structures are obtained. Finally, graphs whose vertices are free linear codes (free submodules) are discussed, highlighting how algebraic properties influence their graph-theoretic behavior.

Talk 2: Algebraic Structures Behind Constacyclic Codes: From Polynomial Factorization to a Systematic Theory



Chakkrid Klin-eam

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Abstract

This talk presents the algebraic structures underlying constacyclic codes, with particular emphasis on their connections to polynomial factorization over finite fields and finite rings. We begin by revisiting the characterization of constacyclic codes as ideals in suitable quotient polynomial rings, where their structure is given by the factorization of the defining polynomial. Several illustrative examples are presented to highlight the main ideas.

The talk then focuses on repeated-root constacyclic codes of length n over the finite chain ring $R = \mathbb{F}_{p^m} + u\mathbb{F}_{p^m}$, where $u^2 = 0$. In this non-semisimple setting, special attention is given to explicit factorizations of the polynomial $x^n - \lambda$, showing how nilpotent elements affect both factorization patterns and the resulting ideal structures. A systematic framework is developed for describing the generators of these codes and their algebraic properties, including methods for lifting factorizations from $\mathbb{F}_{p^m}$ to R .

These results provide deeper insight into the classification of repeated-root constacyclic codes and contribute to a more systematic algebraic theory of constacyclic codes over finite rings.

Talk 3: Good Integers and Applications in Coding Theory



Somphong Jitman

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Abstract

The concept of *good integers* arises in the study of divisibility of expressions of the form $a^k + b^k$, where a and b are fixed non-zero coprime integers. An integer d is called *good* with respect to (a, b) if $d \mid (a^k + b^k)$ for some positive integer k . This notion is closely related to multiplicative orders modulo d and admits a complete characterization in terms of parity conditions on these orders.

This talk presents the definition, basic properties, and characterizations of good integers, together with their refinement into subclasses such as oddly-good and evenly-good integers. Several illustrative examples are provided to demonstrate the practical use of these criteria. In particular, good integers play a central role in the study of the existence and enumeration of cyclic, negacyclic, and abelian codes with desirable duality properties, including Euclidean and Hermitian self-dual codes, as well as complementary dual codes.

Silpakorn University

Philosophy

"An educational management for learners to achieve the academics with outcome-based education led by graduates, combining science and art, creating value for society."

Vision

"A Globally Recognised University of Creativity, Integrating Science and Arts for a Sustainable Society"

Determination

"To create arts, sciences, and wisdom for the society"

Identity

"Silpakorn people are creative thinkers"

Core Value: CREATIVE

C = Customer-focused

R = Resilience

E = Excellence

A = Amicability

T = Trust

I = Innovation

V = Valued People

E = Equality