

The 12th International Coding Theory Seminar (12th ICTS)

Singapore (online)

Friday, 2 October 2026

Contents

About	3
Organizing committee	3
International advisors	3
Local organizing committee	3
Program	4
List of Talks	5
Talk 1: Every Bit Counts: Efficient Non-Binary Coding in the Levenshtein Distance	5
Talk 2: Bounds on k -Uniform Quantum States	6
Talk 3: Scaling Ethereum with Erasure Coding	7

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)

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

Martianus Frederic Ezerman (Nanyang Technological University, Singapore)

Program

All times listed are in **Singapore Time (GMT+8)**.

Date: 2 October 2026 – Friday

Zoom link for the seminars: 14:00 to 17:15 Singapore local time (GMT+8)

<https://ntu-sg.zoom.us/j/88459315723?pwd=yaaxHPQYKAR4RfGWk4nK282MGjTvaL.1>

Time (GMT+7)	Activities
13:15 – 13:45	ICTS Committee Discussion
	By invitation only
14:00 – 14:50	Every Bit Counts: Efficient Non-Binary Coding in the Levenshtein Distance Tuan Thanh NGUYEN <i>Singapore University of Technology and Design</i>
14:50–15:00	Discussion/Break
15:00–15:50 PM	Bounds on k-Uniform Quantum States NING Yu <i>Nanyang Technological University, Singapore</i>
15:50–16:00	Discussion/Break
16:00–16:50	Scaling Ethereum with Erasure Coding Son Hoang DAU <i>RMIT University, Melbourne, Australia</i>
16:50–17:00	Discussion/Break
17:00	Closing

Talk 1: Every Bit Counts: Efficient Non-Binary Coding in the Levenshtein Distance



Tuan Thanh NGUYEN

IEEE Senior Member

Research Fellow, Singapore University of Technology and Design (SUTD)

tuanthanh_nguyen@sutd.edu.sg

Abstract

Insertions, deletions, and substitutions are fundamental error types arising in a variety of data storage and communication systems, particularly in emerging DNA-based data storage, where such errors occur with high probabilities. The design of codes for correcting such edit errors has been extensively studied for several decades, with significant progress and strong coding results for multiple-error settings. Nevertheless, several interesting and fundamental problems remain open even in the simple setting of a single edit error. In this talk, we revisit these fundamental single-error problems and present two approaches toward simple and efficient non-binary edit-error-correcting codes.

Biography

Tuan Thanh Nguyen received the B.Sc. and Ph.D. degrees in mathematics from Nanyang Technological University, Singapore, in 2014 and 2019, respectively. He is currently a Research Fellow with the Advanced Coding and Signal Processing (ACSP) Laboratory, Singapore University of Technology and Design (SUTD).

His research project concentrates on error correction codes and constrained codes for communication systems and data storage systems, especially codes for DNA-based data storage. Dr. Nguyen is a Senior Member of the IEEE.

Talk 2: Bounds on k -Uniform Quantum States



NING Yu

Research Fellow, Nanyang Technological University, Singapore.

yu.ning@ntu.edu.sg

Abstract

k -uniform quantum states are important objects in quantum information theory with applications in quantum secret sharing and quantum information masking. k -uniform states in n -party q -qudit systems are also equivalent to $((n, 1, k + 1))_q$ quantum error correction codes. In this talk, we will introduce recent progress on the upper bounds on the parameter k of k -uniform states, including shadow bounds and generalized Scott's bound.

Biography

Dr. NING Yu is currently a post-doctoral researcher with Nanyang Technological University. He obtained his PhD degree in Computer Science in 2022 from University of Science and Technology of China. From 2023 to 2026, he was a post-doctoral researcher with Hefei National Laboratory.

Talk 3: Scaling Ethereum with Erasure Coding



Son Hoang DAU

Senior Lecturer in Computer Science
RMIT University, Melbourne, Australia
sonhoang.dau@rmit.edu.au

Abstract

Major blockchains such as Bitcoin and Ethereum deliberately limit transaction throughput to preserve security, processing roughly 7-15 transactions per second - far fewer than traditional payment networks such as Visa and Mastercard, which can handle thousands or even tens of thousands. This talk explores the Layer 2 scaling strategy outlined in Ethereum's roadmap and advanced by the Fusaka upgrade in December 2025. The approach aims to enable the secure processing of hundreds of thousands of transactions per second through Data Availability Sampling. At its technical core lies an elegant combination of Reed-Solomon erasure codes and the KZG polynomial commitment scheme, built using pairings on elliptic curves.

Biography

Dr Son Hoang Dau (preferred name: Hoàng) currently works at RMIT University, Melbourne, as a Senior Lecturer in Computer Science, and serves as Program Manager for the Bachelor of Computer Science. He obtained his Bachelor's degree in Applied Mathematics and Informatics from Vietnam National University, Hanoi, in 2006, and his Master's and PhD degrees in Mathematics from Nanyang Technological University in 2008 and 2012, respectively. He received the Australian Research Council's Discovery Early Career Researcher Award (DECRA) for a three-year project (2018–2021) focusing on improving failure recovery mechanisms in distributed storage systems. He co-lead an ARC Discovery Project on efficient and scalable blockchains (2020–2024).