IWSDA'2025 Program

December 7 (Sunday)	December 8 (Monday)	December 9 (Tuesday)	December 10 (Wednesday)	December 11 (Thursday)
	8:30 AM to 9:00 AM Registration with Coffee & Tea	8:30 AM to 9:20 AM Coffee & Tea	8:30 AM to 9:20 AM Coffee & Tea	8:30 AM to 9:20 AM Coffee & Tea
	9:00 AM to 9:20 AM Opening Remarks	**9:20 AM to 10:20 AM** **Keynote Speech 2 (Professor Sihem Mesenger)**	9:20 AM to 11:00 PM Session 4 (5 papers)	9:20 AM to 10:20 AM Session 6 (3 Papers)
	9:20 AM to 11:00 AM Session 1 (5 papers)	10:20 AM to 10:40 AM Coffee & Tea	11:00 AM to 11:20 AM Coffee & Tea	10:20 AM to 10:40 AM Coffee & Tea
	11 AM to 11:20 AM Coffee/Tea Break **11:20 AM to 12:20 PM** **Keynote Speech 1 (Proferssor Pinghi Fan)**	10:40 AM to 12:20 PM Session 3 (5 Papers)	**11:20 AM to 12:20 PM** **Keynote Speech 3 (Professor Stephen Bartlett)**	10:40 AM to 12:20 PM Session 7 (5 Papers)

	12:20 PM to 1:50 PM Lunch	Tour Half day **(Time to be decided)**	12:20 PM to 1:50 PM Lunch	12:20 PM to 1:50 PM Lunch
	1:50 PM to 3:30 PM Session 2 (5 Papers)		1:50 PM to 3:30 PM Session 5 (5 Papers)	1:50 PM to 3:30 PM Session 8 (3 Papers)
	3:30 PM to 4 PM Coffee & Tea		3:30 PM to 4 PM Coffee & Tea	3:30 PM to 4 PM Coffee & Tea
6pm: Evening Welcome Event			**6:30 PM** **Conference banquet** Uni House	

Session 1: Sequences -I (Dec 8)		
Session Chair:		
Sl. No.	**Paper ID**	**Paper Title**
1.	12	**New Sequence Design Metric for AMP Synchronization Field** *Authors: Shukai Wang, Zhengchun Zhou, Yang Yang and Xiaohu Tang*
2.	13	**Four Families of Binary Sequences With Low Ambiguity Function Properties** *Authors: Furong Bao, Zhengchun Zhou, Yang Yang and Ping Deng*
3.	2	**Unimodular Sequence Design for Local Ambiguity Function Shaping** *Authors: Enbo Hu, Yubo Li, Tao Liu and Xiaoyu Chen*
4.	10	**Integer-valued Complete Complementary Codes Based on Hadamard-type Matrices over Finite Fields** *Authors: Tetsuya Kojima*
5.	20	**New Sets of Even-Length Binary Z-Complementary Pairs With Large Zero Correlation Zones** *Authors: Avik Adhikary, Zhengchun Zhou, Xiaohu Tang and Ping Deng*

Session 2: Decoding, Detection, and DNA Storage (Dec 8)

Session Chair:		
Sl. No.	Paper ID	Paper Title
1.	1	**A Fast Decoding Algorithm for Generalized Reed-Solomon Codes and Alternant Codes** *Authors: Nianqi Tang, Yunghsiang Han, Danyang Pei and Chao Chen*
2.	34	**Backward Fano Decoding for PAC Codes** *Authors: Po-Cheng Kung, Chung-Hsuan Wang and Chi-Chao Chao*
3.	17	**Clustering-Free and Clustering-Based Outer Channel Modeling and Decoding for DNA Storage** *Authors: Zhijun Yuan, Yi Ding, Xuan He and Xiaohu Tang*
4.	9	**Double skew cyclic codes over Z_4 + u Z_4** *Authors: Saumya Shah and Amit Sharma*
5.	25	**Construction of Codes Over $\mathbb{F}_{p^3}$ From Cyclic Codes Over $\mathscr{M}_3 (\mathbb{F}_p + u\mathbb{F}_p + u^2\mathbb{F}_p)$** *Authors: Shikha Patel, Soham Ravikant Joshi and Om Prakash*

Session 3: Coding Theory: Hulls and Structures (Dec 9)		
Session Chair:		
Sl. No.	Paper ID	Paper Title
1.	11	**The Hull of Subfield Codes / Subcodes and Their Relationship with Two Generic Constructions of Linear Codes** *Authors: Virginio Fratianni and Sihem Mesnager*
2.	35	**On the Euclidean and Hermitian Hulls of a Class of Twisted Generalized Elliptic Curve Codes** *Authors: Xiaofeng Liu, Jun Zhang and Fang-Wei Fu*
3.	3	**Lexicographic Unequal Error Protection Codes** *Authors: Tomohiko Saito, Yoshifumi Ukita and Toshiyasu Matsushima*
4.	26	**A class of Distance-Optimal Divisible Codes from Simplicial Complexes** *Authors: Vidya Sagar, Rong Luo, Avik Ranjan Adhikary and Zhengchun Zhou*
5.	42	**On some p-ary few-weight linear codes by the help of Weil sums** *Authors: Mrinal Kanti Bose, Udaya Parampalli and Abhay Kumar Singh*

Session 4: Security and Communication Protocols (Learning-Based) (Dec 10)		
Session Chair:		
Sl. No.	Paper ID	Paper Title
1.	43	**Learning-Based RIS-Assisted Secure Beamforming Design: A User-Scalable GNN Approach** *Authors: Natasha Elizabeth Francis, Peng Cheng, William D. Lukito and Yijie Gao*
2.	36	**Soft-DDQN-Based Frequency Selection Strategy in Time-Slotted Channel Hopping Networks** *Authors: Siming Pang, Xianhua Niu, Shiyang Zhou, Bing Liu, Bosen Zeng and Pengxu Chen*

3.	37	**Frequency Hopping Sequences Search Algorithm Based on Deep Reinforcement Learning** *Authors: Siqi Yang, Xianhua Niu, Shiyang Zhou, Bing Liu, Pengxu Chen and Chao Qi*
4.	41	**Verifiability of SPIR Schemes with Malicious Users** *Authors: Emelie Ekenstedt and Lawrence Ong*
5.	33	**A Two-Stage Queue-Aware Prioritized ACB Scheme for Massive Machine-Type Communications** *Authors: Yuxuan Wen, Liu Yang, Chaoyuan Bai, Heng Liu, Ping Wang and Xinhang Tan*

Session 5: Security and Cryptography (Dec 10)		
Session Chair:		
Sl. No.	**Paper ID**	**Paper Title**
1.	16	**Silver Nano particles device based lightweight cryptographic system toward IoT edge security** *Authors: Hiroki Tabata, Yuma Yamashita, Yusuke Nakaoka, Oradee Srikimkaew, Yuki Usami, Shunsuke Araki and Hirofumi Tanaka*
2.	22	**A Study on Integerization of 4-Dimensional Lorenz-Stenflo System for A Key Sharing Method** *Authors: Keishi Kanzaki, Kohei Takaichi, Jun-Juh Yan, Takeru Miyazaki, Satoshi Uehara and Shunsuke Araki*
3.	4	**On the Chaotic Behavior of Integer Sequences from Linear Feedback Shift Registers** *Authors: Hyojeong Choi, Gangsan Kim, Hong-Yeop Song and Hongjun Noh*
4.	15	**MATRIX: Mixed-basis Architecture using Towering Field Representations for Extendable Grostl State Blocks** *Authors: Yuta Kodera and Yasuyuki Nogami*
5.	14	**A study on extract bits of pseudorandom sequences generated by Me operation on the elliptic curve** *Authors: Renta Yamauchi, Natsuo Hayashi, Takeru Miyazaki, Shunsuke Araki and Satoshi Uehara*

Session 6: Next-Gen Wireless Systems and Estimation (Dec 11)		
Session Chair:		
Sl. No.	**Paper ID**	**Paper Title**
1.	21	**Grid Evolution Based on Cluster Fusion for Doubly Fractional Channel Estimation in OTFS Systems** *Authors: Xiangjun Li, Qianli Wang, Zilong Liu and Zhengchun Zhou*
2.	18	**Efficient Signal Detection Method Based on Sparse Bayesian Learning in ZP-OTFS Systems** *Authors: Xueping Lan, Xiaoxu Zhang, Pingzhi Fan, Zhengquan Zhang, Xianfu Lei, Yi Zhou, Li Hao and Zheng Ma*
3.	39	**Improved Channel Estimation Scheme for STAR-RIS-Assisted Communication Systems** *Authors: Shibsankar Das and Adrish Banerjee*

Session 7: Sequences -II (Dec 11)		
Session Chair:		
Sl. No.	Paper ID	Paper Title
1.	32	**Two Novel Constructions of Mutually Orthogonal Complementary Sets** *Authors: Yu Wang, Dejiao Cai, Yongqiu Chen, Zilong Liu, Chunlei Li and Xiuping Peng*
2.	8	**New Constructions of Golay-ZCZ Arrays with Flexible Parameters via EGBFs** *Authors: Aditya Prakash, Prashant Kumar Srivastava and Sudhan Majhi*
3.	38	**Golay-ZCZ Sequence Sets with Flexible Lengths Based on Matrices of Polynomials** *Authors: Shibsankar Das, Adrish Banerjee, Udaya Parampalli and Zilong Liu*
4.	27	**Training Design for Generalized Spatial Modulation Systems Based on Sparse Zero-Correlation Zone Arrays** *Authors: Cheng-Yu Pai, Hen-Geul Yeh and Chao-Yu Chen*
5.	31	**Construction of Binary Sequence Having PMEPR Bounded by 4** *Authors: Piyush Priyanshu, Sudhan Majhi and Subhabrata Paul*

Session 8: Sequences, Source Coding, and Applications (Dec 11)		
Session Chair:		
Sl. No.	Paper ID	Paper Title
1.	19	**On Decimations of m-sequences giving few valued cross correlations** *Authors: Serdar Boztas, Ferruh Ozbudak, Elif Kurtaran Ozbudak and Eda Tekin*
2.	28	**Simulated Channel State Information in Indoor Environments for Respiration Monitoring Using Sionna** *Authors: James Rhodes, Lawrence Ong and Duy Ngo*
3.	7	**Fairer Noiseless Broadcast Source Coding** *Authors: Serdar Boztas*

Keynote Speeches:

1. Speaker: Prof. Pingzhi Fan

Title: 2D Delay-Doppler Pilots Based on Perfect Arrays/Sequences and Channel Estimation for MIMO OTFS

Talk Outline: Orthogonal time frequency space (OTFS) is a novel modulation scheme to handle the high Doppler effect under time varying channels. In this paper, in order to improve channel estimation accuracy and to reduce pilot overhead, two types of two-dimensional (2D) pilots and the corresponding matched filters are designed for multi-antenna OTFS systems. Our 2D pilots are formed using perfect arrays (such as Frank array, Chu array, etc) or perfect-sequence based Kronecker array (PKA). Different from the previous multi-antenna OTFS pilots, these 2D pilots are placed on the same area in the delay-Doppler domain, using code division multiplexing to deal with the interference between pilots of different antennas, known as pilot pollution. To improve the channel estimation performance, matched filters are also designed to better compensate the phase shift of the 2D pilot response in the delay-Doppler domain. Compared with the conventional multi-antenna OTFS schemes, the proposed scheme achieves significantly better NMSE performance, while having lower pilot overhead under multi-antenna scenarios. Finally, more recent new pilot arrays are also reported.

Speaker's Short Bio: Pingzhi Fan (Fellow, IEEE) is currently a distinguished professor of Southwest Jiaotong University (SWJTU), honorary dean of the SWJTU-Leeds Joint School (2015-), honorary professor of the University of Nottingham (Ningbo, 2025), and a visiting professor of Leeds University, UK (1997-). He is a recipient of the UK ORS Award (1992), the National Science Fund for Distinguished Young Scholars (1998, NSFC), IEEE VT Society Jack Neubauer Memorial Award (2018), IEEE SP Society SPL Best Paper Award (2018), IEEE VT Society Best Magazine Paper Award (2023), and several IEEE conference best paper awards. He served as chief scientist of a National 973 Plan Project (MoST, 2012.1-2016.12). He also served as general chair or TPC chair of a number of IEEE conferences, including VTC2016Spring, ITW2018, IWSDA2022, PIMRC2023, VTC2025Fall, as well as the coming ISIT2026, ICC2028. His research interests include high mobility wireless communications, multiple access techniques, ISAC, signal design & coding, etc. He is an IEEE VTS Distinguished Speaker (2022-2028), a fellow of IEEE, IET, CIE and CIC.

2. Speaker: Prof. Sihem Mesnager

Title: Algebraic Equations over Finite Fields: Advances in Resolution Techniques and Practical Impacts in Modern Technology

Talk Outline: This talk will discuss the problem of solving algebraic equations over finite fields. This fundamental issue has become increasingly important due to its critical role in various applied domains, particularly information theory and cryptography. Addressing equations over finite fields is essential from both theoretical and practical perspectives. Historically, researchers have focused on determining the number of solutions for certain equations rather than explicitly deriving all possible solutions. While this limited approach has sufficed for some practical applications in cryptographic function theory, we need to enhance our understanding to yield more comprehensive results. Developing tools and performing methods to solve an extensive range of equations over finite fields is crucial, as it provides valuable resources for theorists, cryptographers, and coding theorists. We will begin by outlining our primary motivations for this work. Next, we will present significant recent achievements in solving key algebraic equations over finite fields and discuss the methodologies and key mathematical ingredients of these developments.

Speaker's Short Bio:

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3. Speaker: Prof. Stephen Bartlett
Topic: On Quantum computing and Quantum Error Correction.