

CONFERENCE PROGRAM
2023 IEEE Information Theory Workshop (ITW 2023)
Palais du Grand Large, Saint-Malo, France

Sunday, April 23, 2023

17:00 – 19:00 Registrations
 19:00 – 20:30 Welcome reception



Monday, April 24, 2023

First plenary talk at ITW.

Saint-Malo, the city of pirates.

Gil Shamir (Google Research) – Monday morning – Plenary Lecture	
Maupertuis	08:30 - 09:30
08:30	Machine Learning – From Theory to Production Or Is it From Production to Theory

Technical sessions from 9:45 to 17:30, 10 technical sessions, 30 talks.

Algebraic Coding Theory – Monday morning – MoA1	
Maupertuis	09:45 - 10:45
09:45	On the Density of Codes Over Finite Chain Rings by Anna-Lena Horlemann, Violetta Weger, and Nadja Willenborg
10:05	Linearized Reed-Solomon Codes With Support-Constrained Generator Matrix by Hedongliang Liu, Hengjia Wei, Antonia Wachter-Zeh, and Moshe Schwartz
10:25	Performance Analysis of Binary Chirp Decoding by Mahdi Bayanifar, Robert Calderbank, and Olav Tirkkonen

Information Theory – Monday morning – MoB1	
Vauban	09:45 - 10:45
09:45	Stability of Bernstein's Characterization of Gaussian Vectors and a Soft Doubling Argument by Mohammad Mahvari Habibabadi and Gerhard Kramer
10:05	An Erasure Queue-Channel With Feedback: Optimal Transmission Control to Maximize Capacity by K Nithin Varma and Krishna P Jagannathan
10:25	Information-Theoretic Regret Bounds for Bandits With Fixed Expert Advice by Khaled Eldowa, Nicolò Cesa-Bianchi, Alberto Maria Metelli, and Marcello Restelli



Algebraic Coding Theory – Monday morning – MoA2	
Maupertuis	11:00 - 12:00
11:00	On the Distribution of Partially-Symmetric Codes for Automorphism Ensemble Decoding by Charles Pillet, Valerio Bioglio, and Pascal Giard
11:20	Galois Hull Dimensions of Gabidulin Codes by Habibul Habibul Islam and Anna-Lena Horlemann
11:40	Hyperbolic Sets in Incomplete Tables by José Joaquín Bernal and Juan Jacobo Simón

Information Theory – Monday morning – MoB2	
Vauban	11:00 - 12:00
11:00	An Upper Bound on the Reliability Function of the DMC With or Without Mismatch by Anelia Somekh-Baruch
11:20	Capacity Bounds for Broadcast Channels With Bidirectional Conferencing Decoders by Reza K Farsani and Wei Yu
11:40	Goal-Oriented Single-Letter Codes for Lossy Joint Source-Channel Coding by Photios A. Stavrou and Marios Kountouris

Cryptography – Monday afternoon – MoA3	
Maupertuis	14:00 - 15:00
14:00	An Algebraic Attack Against McEliece-Like Cryptosystems Based on BCH Codes by Freja Elbro and Christian Majenz
14:20	Symmetric 4-Adic Complexity of Quaternary Sequences of Length P_q With Low Autocorrelation by Vladimir Edemskiy and Sofia Koltsova
14:40	Improved Alpha-Information Bounds for Higher-Order Masked Cryptographic Implementations by Yi Liu, Julien Béguinot, Wei Cheng, Sylvain Guilley, Loïc Masure, Olivier Rioul, François-Xavier Standaert

Information Theory – Monday afternoon – MoB3	
Vauban	14:00 - 15:00
14:00	Rate-Distortion in Non-Convex Families by Hila Ratson and Ram Zamir
14:20	A Communication Optimal Transport Approach to the Computation of Rate Distortion Functions by Shitong Wu, Wen Hao Ye, Hao Wu, Huihui Wu, Wenyi Zhang, and Bo Bai
14:40	Optimal Zero-Error Coding for Computing Under Pairwise Shared Side Information by Nicolas Charpenay, Maël le Treust, and Aline Roumy



Learning – Monday afternoon – MoA4	
Maupertuis	15:15 - 16:15
15:15	Recurrent Variational Information Bottleneck for Time Series Trend Prediction by Sung-Hyuk Pang, Alban Goupil, Valeriu Vrabie, and Loic Kolodziejczak
15:35	Minimizing the Outage Probability in a Markov Decision Process by Vincent Corlay and Jean-Christophe Sibel
15:55	Generalization Properties of Adversarial Training for l0-Bounded Adversarial Attacks by Payam Delgosha, Hamed Hassani, and Ramtin Pedarsani

Caching – Monday afternoon – MoB4	
Vauban	15:15 - 16:15
15:15	Coded Caching With Shared Caches and Private Caches by Elizabeth Peter, K. K. Krishnan Namboodiri, and B. Sundar Rajan
15:35	Cache-Aided Multi-User Private Information Retrieval Using PDAs by Kanishak Vaidya and B. Sundar Rajan
15:55	A Shared Cache Coded Caching Scheme Using Designs and Circuits of Matrices by Niladri Das and B. Sundar Rajan

Learning – Monday afternoon – MoA5	
Maupertuis	16:30 - 17:30
16:30	PolarAir: A Compressed Sensing Scheme for Over-The-Air Federated Learning by Michail Gkagkos, Krishna Narayanan, Jean-François Chamberland, and Costas N Georgiades
16:50	Permutation Invariant Individual Batch Learning by Yaniv Fogel and Meir Feder
17:10	BNNS- and TISTA- Based Signature Code Design for User Identification and Channel Estimation Over Multiple-Access Channel With Rayleigh Fading by Lantian Wei, Shan Lu, and Hiroshi Kamabe

Caching – Monday afternoon – MoB5	
Vauban	16:30 - 17:30
16:30	On Cache-Aided Multi-User Private Information Retrieval With Small Caches by Charul Rajput and B. Sundar Rajan
16:50	Combinatorial Multi-Access Coded Caching: Improved Rate-Memory Trade-Off With Coded Placement by K. K. Krishnan Namboodiri and B. Sundar Rajan
17:10	The Optimal Rate Memory Tradeoff in Multi-Access Coded Caching: Large Cache Size by Vijith Kumar K P, Brijesh Kumar Rai, and Tony Jacob

End of activities for Monday.
For dinner, try Brittany and French specialties.



Tuesday, April 25, 2023

Second plenary talk at ITW.

Markus Grassl (Univ. of Gdansk) – Tuesday morning – Plenary Lecture	
Maupertuis	08:30 - 09:30
08:30	Various Facets of Algebraic Quantum Codes

Technical sessions from 9:45 to 12:00 only, 4 technical sessions, a total of 12 talks on this Tuesday morning. The afternoon is dedicated to four hours of tutorials.

Quantum – Tuesday morning – TuA1	
Maupertuis	09:45 - 10:45
09:45	Achievable Error Exponents of Data Compression With Quantum Side Information and Communication Over Symmetric Classical-Quantum Channels by Joseph M. Renes
10:05	Online Convex Optimization of Programmable Quantum Computers to Simulate Time-Varying Quantum Channels by Hari Hara Suthan Chittoor, Osvaldo Simeone, Leonardo Banchi, and Stefano Pirandola
10:25	Database Matching Under Adversarial Column Deletions <i>(moved from Friday)</i> by Serhat Bakirtas and Elza Erkip

Security – Tuesday morning – TuB1	
Vauban	09:45 - 10:45
09:45	Construction and Secrecy Gain of Formally Unimodular Lattices in Odd Dimensions by Maiara Francine Bollauf, Hsuan-Yin Lin, and Øyvind Ytrehus
10:05	Secure Distributed Gram Matrix Multiplication by Okko Makkonen and Camilla Hollanti
10:25	The Secrecy Capacity of Gaussian Wiretap Channels With Rate-Limited Help at the Encoder by Sergey Loyka and Neri Merhav

Quantum – Tuesday morning – TuA2	
Maupertuis	11:00 - 12:00
11:00	Upper Bounds on the Distillable Randomness of Bipartite Quantum States by Ludovico Lami, Bartosz Regula, Xin Wang, and Mark M. Wilde
11:20	Performance of Uncoded Implementation of Grover's Algorithm on Today's Quantum Processors by Yunos El Kaderi, Andreas Honecker, and Iryna Andriyanova
11:40	Neural Belief Propagation Decoding of Quantum LDPC Codes Using Overcomplete Check Matrices by Sisi Miao, Alexander Schnerring, Haizheng Li, and Laurent Schmalen



Security – Tuesday morning – TuB2	
Vauban	11:00 - 12:00
11:00	Secure Over-The-Air Computation Using Zero-Forced Artificial Noise by Luis Mañny and Antonia Wachter-Zeh
11:20	Group-Testing Aggregate Entity Authentication by Shoichi Hirose and Junji Shikata
11:40	Active User Identification in Fast Fading Massive Random Access Channels by Jyotish Robin and Elza Erkip

Two tutorials open to all ITW participants on Tuesday afternoon.
No extra fees for the tutorials, they are included in the registration.
Each tutorial includes a break of fifteen minutes in its middle.
The technical part fills two hours per tutorial.

Anthony Leverrier (INRIA Paris) – Tuesday afternoon – Tutorial 1	
Maupertuis	13:30 - 15:45
13:30	Quantum LDPC Codes

Sebastian Cammerer (Nvidia Stuttgart) – Tuesday afternoon – Tutorial 2	
Maupertuis	16:15 – 18:30
16:15	Recent Advances in Deep Learning for Channel Coding

End of activities for Tuesday.
Enjoy the city of Saint-Malo in the evening, then sleep well.



Wednesday, April 26, 2023

No plenary talk at ITW on Wednesday morning.

We have 4 technical sessions, 12 talks, before jumping on two buses at 1pm.

Rank-Metric Codes – Wednesday morning – WeA1	
Maupertuis	09:00 - 10:00
09:00	Improved Decoding of Symmetric Rank Metric Errors by Alain Couvreur
09:20	Generic Decoding in the Cover Metric by Sebastian Bitzer, Julian Renner, Antonia Wachter-Zeh, and Violetta Weger
09:40	Generalized Low Rank Parity Check Codes by Ermes Franch, Philippe Gaborit, and Chunlei Li

Security – Wednesday morning – WeB1	
Vauban	09:00 - 10:00
09:00	A Constructive Approach to Multimedia Codes With Complete Traceability Resistant to δ -Noise by Marcel Fernandez, Grigory Kabatiansky, Sebastia Martin, and Cédric Tavernier
09:20	Retractable Commitment Over Noisy Channels by Remi A Chou and Matthieu Bloch
09:40	Covert Communication Over Two Types of Additive Noise Channels by Cécile Bouette, Laura Luzzi, and Ligong Wang

Error Exponents – Wednesday morning – WeA2	
Maupertuis	10:15 – 11:15
10:15	Error Exponents of the Dirty-Paper and Gel'fand-Pinsker Channels by Ran Tamir and Neri Merhav
10:35	Testing Against Independence With an Eavesdropper by Sara Faour, Mustapha Hamad, Mireille Sarkiss, and Michele A Wigger
10:55	Concentration Properties of Generalized Random Gilbert-Varshamov Codes by Lan V. Truong and Albert Guillén i Fàbregas

Message Passing – Wednesday morning – WeB2	
Vauban	10:15 - 11:15
10:15	Lossy Compression via Sparse Regression Codes: An Approximate Message Passing Approach by Huihui Wu, Wenjie Wang, Shansuo Liang, Wei Han, and Bo Bai
10:35	Approximate Message Passing for Multi-Layer Estimation in Rotationally Invariant Models by Yizhou Xu, Hou TianQi, Shansuo Liang, and Marco Mondelli
10:55	Towards Convergent Approximate Message Passing by Alternating Constrained Minimization of Bethe Free Energy by Christo Kurisummoottil Thomas, Zilu Zhao, and Dirk Slock



Wednesday 13:00 – 18:00

Social Event: Trip to Mont Saint-Michel, Normandy, France.

This event is included in the registration.

Buses depart at 13:00.



Southeast view of Mont Saint-Michel.



In 1067 the monastery of Mont Saint-Michel gave its support to William the Conqueror in his claim to the throne of England. Bayeux Tapestry scenes 16 and 17: William and Harold at Mont Saint-Michel (at top centre); Harold rescuing knights from quicksand.



Thursday, April 27, 2023

Third plenary talk at ITW.

Negar Kiyavash (EPFL) – Thursday morning – Plenary Lecture	
Maupertuis	08:30 - 09:30
08:30	Causal Identification: Are We There Yet?

Technical sessions from 9:45 to 17:10, 10 technical sessions, 28 talks.

Coding Theory – Thursday morning – ThA1	
Maupertuis	09:45 - 10:45
09:45	Bidirectional Piggybacking Design for All Nodes With Sub-Packetization $l = R$ by Ke Wang and Zhifang Zhang
10:05	New Construction of $(K+r, K)$ Systematic MDS Array Codes With $r \leq 4$ by Zhe Zhai, Qifu T Sun, Sheng Jin, Shaoteng Liu, and Xiangyu Chen
10:25	Multichannel Dual Codes: The Choice of Channels Carries Information by Hoover H. F. Yin and Xishi Wang

Signal Processing and Estimation – Thursday morning – ThB1	
Vauban	09:45 - 10:45
09:45	Compressed Sensing With l_0 -Norm: Statistical Mechanics Analysis and Algorithms for Signal Recovery by Damien Barbier, Florent Krzakala, and Lenka Zdeborova
10:05	A Generalization of the Equal Coding Theorem by Hui-An Shen, Stefan Moser, and Jean-Pascal Pfister
10:25	Shrinkage Coefficient Estimation for Regularized Tyler's M-Estimator: A Leave One Out Approach by Karim T Abou-Moustafa

Coding Theory – Thursday morning – ThA2	
Maupertuis	11:00 - 12:00
11:00	Code at the Receiver, Decode at the Sender - GRAND With Feedback By Joseph Griffin, Peihong Yuan, Petar Popovski, Ken R. Duffy, and Muriel Médard
11:20	Duality and LP Bounds for Codes With Locality by Anina Gruica, Benjamin Jany, and Alberto Ravagnani
11:40	Deterministic K-Identification for Slow Fading Channels by Mohammad Javad Salarisaddigh and Christian Deppe



Signal Processing and Estimation – Thursday morning – ThB2	
Vauban	11:00 - 12:00
11:00	Improved Bounds for Efficiently Decodable Probabilistic Group Testing With Unreliable Items by Sarthak Jain, Martina Cardone, and Soheil Mohajer
11:20	Gradient Flow on Extensive-Rank Positive Semi-Definite Matrix Denoising by Antoine Bodin and Nicolas Macris
11:40	On Non-Interactive Source Simulation via Fourier Transform by Farhad Shirani and Mohsen Heidari

Coding Theory – Thursday afternoon – ThA3	
Maupertuis	14:00 - 15:00
14:00	Achievable Information Rates and Concatenated Codes for the DNA Nanopore Sequencing Channel by Issam Maarouf, Eirik Rosnes, and Alexandre Graell i Amat
14:20	Index-Based Concatenated Codes for the Multi-Draw DNA Storage Channel by Lorentz Welter, Issam Maarouf, Andreas Lenz, Antonia Wachter-Zeh, Eirik Rosnes, Alexandre Graell i Amat
14:40	Bounds on Mixed Codes With Finite Alphabets by Yonatan Yehezkeally, Haider Al Kim, Sven Puchinger, and Antonia Wachter-Zeh

Multiple Access – Thursday afternoon – ThB3	
Vauban	14:00 - 15:00
14:00	Sparse NOMA: An Achievable Region via Random Coordinate Transformations by Benjamin M. Zaidel, Chen Eger, and Shlomo (Shitz) Shamai
14:20	Multi-User Privacy Mechanism Design With Non-Zero Leakage by Amirreza Zamani, Tobias J. Oechtering, and Mikael Skoglund
14:40	Fundamental Limits of Distributed Optimization Over Multiple Access Channel by Shubham K Jha and Prathamesh Mayekar

Coding Theory – Thursday afternoon – ThA4	
Maupertuis	15:15 – 16:15
15:15	Rate-Adaptive Protograph MacKay-Neal Codes by Ayman Zahr, Balazs Matuz, and Gianluigi Liva
15:35	Average Probability of Error for Single Uniprior Index Coding Over Rayleigh Fading Channel by Anjana Ambika Mahesh, Charul Rajput, Bobbadi Roopa, and B. Sundar Rajan
15:55	Probabilistic Analysis of LLL-Based Decoder of Interleaved Chinese Remainder Codes by Matteo Abbonati, Eleonora Guerrini, and Romain Lebreton



Communications – Thursday afternoon – ThB4	
Vauban	15:15 - 16:15
15:15	On the State Estimation Error of "Beam-Pointing" Channels: The Binary Case by Siyao Li and Giuseppe Caire
15:35	A Modified Probabilistic Amplitude Shaping Scheme to Use Sign-Bit-Like Shaping With a BICM by Vincent Corlay and Hamidou Dembélé
15:55	Robustness of Massive MIMO to Location and Phase Errors by Elhamsadat Anarakifirooz and Sergey Loyka

Age of Information – Thursday afternoon – ThA5	
Maupertuis	16:30 – 17:10
16:30	Age of Information With On-Off Service by Ashirwad Sinha, Praful Deolal Mankar, Nikolaos Pappas, and Harpreet S Dhillon
16:50	Coding Gain for Age of Information in a Multi-Source System With Erasure Channel by Shubhransh Singhvi and Praful Deolal Mankar

Communications – Thursday afternoon – ThB5	
Vauban	16:30 - 17:10
16:30	Channel Estimation and Data Detection in MIMO Channels With 1-Bit ADC Using Probit Regression by Khodor Safa, Raul de Lacerda, and Sheng Yang
16:50	Sequential Joint Communication and Sensing of Fixed Channel States by Meng-Che Chang, Shi-Yuan Wang, and Matthieu Bloch

Thursday evening

Conference banquet: 19:00 – 21:30

At our conference center, the Palais du Grand Large.



Friday, April 28, 2023

No plenary talk at ITW on Friday morning.

Technical sessions from 9:00 to 12:30, 5 technical sessions, 15 talks.

Computing and Combinatorics – Friday morning – FrA1	
Maupertuis	09:00 – 10:00
09:00	Coded Computation of Multiple Functions by Wilton Kim, Stanislav Kruglik, and Han Mao Kiah
09:20	Coded Distributed Computing for Sparse Functions With Structured Support by Federico Brunero, Kai Wan, Giuseppe Caire, and Petros Alia
09:40	Coded Distributed Computing for Hierarchical Multi-Task Learning by Haoyang Hu, Songze Li, Minquan Cheng, and Youlong Wu

Entropy Estimation – Friday morning – FrB1	
Vauban	09:00 – 10:00
09:00	State Estimation Entropy for Two-State Markov Sources in Slotted ALOHA Random Access Channels by Giuseppe Cocco, Andrea Munari, and Gianluigi Liva
09:20	Entropy Rate Bounds of Integer-Valued Processes via Second-Order Statistics by Ran Tamir
09:40	Truly Bayesian Entropy Estimation by Ioannis Papageorgiou and Ioannis Kontoyiannis

Computing and Combinatorics – Friday morning – FrA2	
Maupertuis	10:15 – 11:15
10:15	Asymmetric Tree Correlation Testing for Graph Alignment by Jakob Maier and Laurent Massoulié
10:35	Multi-User Distributed Computing via Compressed Sensing by Ali Khaledi, Sajad Daei, Marios Kountouris, and Petros Elia
10:55	Optimal Fault-Tolerant Data Fusion in Sensor Networks: Fundamental Limits and Efficient Algorithms by Marian Temprana Alonso, Farhad Shirani, and S.S. Iyengar

Network Information Theory and Coding – Friday morning – FrB2	
Vauban	10:15 - 11:15
10:15	Channel Codes for Relayless Networks With General Message Access Structure by Jun Muramatsu
10:35	The Role of the Alphabet in Network Coding: An Optimization Approach by Christopher Hojny, Altan B. Kılıç, and Alberto Ravagnani
10:55	Transfer Learning for Quantum Classifiers: An Information-Theoretic Generalization Analysis <i>(moved from Tuesday)</i> by Sharu Theresa Jose and Osvaldo Simeone



Friday, April 28, 2023

Computing and Combinatorics – Friday morning – FrA3	
Maupertuis	11:30 – 12:45
11:30	A Combinatorial Proof for the Dowry Problem by Xujun Liu, Olgica Milenkovic, and George V. Moustakides
11:50	Bounds and Algorithms for Frameproof Codes and Related Combinatorial Structures by Marco Dalai, Stefano Della Fiore, Adele Rescigno, and Ugo Vaccaro
12:10	Bye Bye session by Gilles Zémor and Joseph J. Boutros.



ITW 2023 General Co-Chairs
Joseph J. Boutros and Gilles Zémor

with our TPC chairs,
Anne Canteaut, Michelle Effros, Navin Kashyap, and Olivier Rioul

For registration: <https://itw2023.org>

