Stanford



Mary Wootters

Associate Professor of Computer Science and of Electrical Engineering

Bio

ACADEMIC APPOINTMENTS

- Associate Professor, Computer Science
- Associate Professor, Electrical Engineering
- Member, Institute for Computational and Mathematical Engineering (ICME)

LINKS

- Personal website: http://sites.google.com/site/marywootters

Teaching

COURSES

2026-27

- Dealing with Data: OSPOXFRD 44A (Aut)

2025-26

- Design and Analysis of Algorithms: CS 161 (Aut)
- Randomized Algorithms and Probabilistic Analysis: CME 309, CS 265 (Win)

2024-25

- Algebraic Error Correcting Codes: CS 250, EE 387 (Win)
- Randomized Algorithms and Probabilistic Analysis: CME 309, CS 265 (Win)

2023-24

- Dealing with Data: OSPISTAN 20 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Kamilla Nazirkhanova

Doctoral Dissertation Advisor (AC)

Dorsa Fathollahi, Ching-Fang Li

Master's Program Advisor

Vineel Bhat, Samantha Estrada, Kaitlyn Kwan, Emily Xia, Seiji Yang, Allen Yuan

Doctoral (Program)

Kamilla Nazirkhanova

Publications

PUBLICATIONS

- **Limitations to Computing Quadratic Functions on Reed-Solomon Encoded Data**
  Blackwell, K., Wootters, M.
  edited by Saraf, S.
  SCHLOSS DAGSTUHL, LEIBNIZ CENTER INFORMATICS.2026
- **An Undergraduate Course in Causality** *HARVARD DATA SCIENCE REVIEW*
  Bottmer, L., Imbens, G., Weitze, J., Wootters, M.
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- **Optimization by decoded quantum interferometry.** *Nature*
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- **Robust Gray Codes Approaching the Optimal Rate** *IEEE TRANSACTIONS ON INFORMATION THEORY*
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- **List-Decoding Capacity Implies Capacity on the q-ary Symmetric Channel**
  Pernice, F., Sprumont, O., Wootters, M.
  edited by Koucky, M., Bansal, N.
  ASSOC COMPUTING MACHINERY.2025: 855-866
- **Improved Bounds on Access-Redundancy Tradeoffs in Quantized Linear Computations**
  Li, C., Wootters, M., IEEE
  IEEE.2025
- **Repairing Reed-Solomon Codes Over Prime Fields via Exponential Sums** *IEEE TRANSACTIONS ON INFORMATION THEORY*
  Con, R., Shutty, N., Tamo, I., Wootters, M.
  2024; 70 (12): 8587-8594
- **IMPROVED LIST-DECODABILITY AND LIST-RECOVERABILITY OF REED-SOLOMON CODES VIA TREE PACKINGS** *SIAM JOURNAL ON COMPUTING*
  Guo, Z., Li, R., Shangguan Chong, Tamo, I., Wootters, M.
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- **Improved Construction of Robust Gray Codes**
  Fathollahi, D., Wootters, M., IEEE
  IEEE.2024: 37-42
- **When Do Low-Rate Concatenated Codes Approach The Gilbert-Varshamov Bound?**
  Doron, D., Mosheiff, J., Wootters, M.
  edited by Kumar, A., Ron-Zewi, N.
  SCHLOSS DAGSTUHL, LEIBNIZ CENTER INFORMATICS.2024
- **A Characterization of Optimal-Rate Linear Homomorphic Secret Sharing Schemes, and Applications**
  Blackwell, K., Wootters, M.
  edited by Guruswami
  SCHLOSS DAGSTUHL, LEIBNIZ CENTER INFORMATICS.2024
- **LOW-DENSITY PARITY-CHECK CODES ACHIEVE LIST-DECODING CAPACITY** *SIAM JOURNAL ON COMPUTING*
  Mosheiff, J., Resch, N., Ron-zewi, N., Silas, S., Wootters, M.

2024; 53 (6): 38-73

- **Viderman's algorithm for quantum LDPC codes**
  Krishna, A., Navon, I., Wootters, M.
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- **Magnetic DNA random access memory with nanopore readouts and exponentially-scaled combinatorial addressing.** *Scientific reports*
  Lau, B., Chandak, S., Roy, S., Tatwawadi, K., Wootters, M., Weissman, T., Ji, H. P.
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- **IMPROVED LIST DECODING OF FOLDED REED-SOLOMON AND MULTIPLICITY CODES** *SIAM JOURNAL ON COMPUTING*
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- **Bounds for List-Decoding and List-Recovery of Random Linear Codes** *IEEE TRANSACTIONS ON INFORMATION THEORY*
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- **Threshold Rates for Properties of Random Codes** *IEEE TRANSACTIONS ON INFORMATION THEORY*
  Guruswami, V., Moshieff, J., Resch, N., Silas, S., Wootters, M.
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- **Improved List-Decodability and List-Recoverability of Reed-Solomon Codes via Tree Packings**
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- **Improved List-Decodability of Random Linear Binary Codes**
  Li, R., Wootters, M.
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- **Embedded Index Coding**
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  IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2021: 1461–77

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  Li, R., Wootters, M.
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- **Superbridge and bridge indices for knots** *JOURNAL OF KNOT THEORY AND ITS RAMIFICATIONS*
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  Foucart, S., Needell, D., Pathak, R., Plan, Y., Wootters, M.
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  Lopez, H. H., Malmskog, B., Matthews, G. L., Pinero-Gonzalez, F., Wootters, M.
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- **Illusion of large on-chip memory by networked computing chips for neural network inference** *NATURE ELECTRONICS*
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- **On Greedy Approaches to Hierarchical Aggregation**
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- **OVERCOMING HIGH NANOPORE BASECALLER ERROR RATES FOR DNA STORAGE VIA BASECALLER-DECODER INTEGRATION AND CONVOLUTIONAL CODES**
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- **A Data-Compressive Wired-OR Readout for Massively Parallel Neural Recording**
  Muratore, D., Tandon, P., Wootters, M., Chichilnisky, E. J., Mitra, S., Murmann, B.
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  Grossi, A., Vianello, E., Sabry, M. M., Barlas, M., Grenouillet, L., Coignus, J., Beigne, E., Wu, T., Le, B. Q., Wootters, M. K., Zambelli, C., Nowak, E., Mitra, et al
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- **A 43pJ/Cycle Non-Volatile Microcontroller with 4.7 mu s Shutdown/Wake-up Integrating 2.3-bit/Cell Resistive RAM and Resilience Techniques**
  Wu, T. F., Le, B. Q., Radway, R., Bartolo, A., Hwang, W., Jeong, S., Li, H., Tandon, P., Vianello, E., Vivet, P., Nowak, E., Wootters, M. K., Wong, et al
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  Muratore, D. G., Tandon, P., Wootters, M., Chichilnisky, E. J., Mitra, S., Murmann, B., IEEE
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- **Stochastic Gradient Coding for Flexible Straggler Mitigation in Distributed Learning**
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- **Embedded Index Coding**
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- **Improved read/write cost tradeoff in DNA-based data storage using LDPC codes**
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- **Average-radius list-recoverability of random linear codes**
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  Porter, A., Silas, S., Wootters, M., IEEE
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- **Improved decoding of Folded Reed-Solomon and Multiplicity Codes**
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- **Exponential Decay of Reconstruction Error From Binary Measurements of Sparse Signals** *IEEE TRANSACTIONS ON INFORMATION THEORY*
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- **Repairing multiple failures for scalar MDS codes**
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- **Blind Joint MIMO Channel Estimation and Decoding**
  Dean, T., Wootters, M., Goldsmith, A., IEEE
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- **Limitations of Piggybacking Codes with Low Substriping**
  Hulett, R., Wootters, M., IEEE
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- **SPECIAL ISSUE: APPROX-RANDOM 2015 Foreword** *THEORY OF COMPUTING*
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- **Local correctability of expander codes**
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  Hemenway, B., Ostrovsky, R., Wootters, M.
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