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

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)

2022-23

- Citizenship in the 21st Century: COLLEGE 102 (Win)
- Design and Analysis of Algorithms: CS 161 (Spr)
- Randomized Algorithms and Probabilistic Analysis: CME 309, CS 265 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Shaun Datta, Kamilla Nazirkhanova

Postdoctoral Faculty Sponsor

Tushant Mittal

Doctoral Dissertation Advisor (AC)

Keller Blackwell, Dorsa Fathollahi

Orals Evaluator

Keller Blackwell, Xiao Mao, Jack Zhou

Master's Program Advisor

Adi Badlani, Vineel Bhat, Ryan Catullo, Jason Chen, Samantha Estrada, Lisa Liu, Hlumelo Notshe, Vikram Sivashankar, Vicky Wu, Seiji Yang, Allen Yuan

Doctoral (Program)

Keller Blackwell, Kamilla Nazirkhanova

Publications

PUBLICATIONS

- **Optimization by decoded quantum interferometry.** *Nature*
  Jordan, S. P., Shutty, N., Wootters, M., Zalcman, A., Schmidhuber, A., King, R., Isakov, S. V., Khattar, T., Babbush, R.
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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
- **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.
  2024; 53 (2): 389-430
- **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
- **Improved Construction of Robust Gray Codes**
  Fathollahi, D., Wootters, M., IEEE
  IEEE.2024: 37-42
- **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
- **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

- **Viderman's algorithm for quantum LDPC codes**
  Krishna, A., Navon, I., Wootters, M.
  edited by Woodruff, D. P.
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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*
  Kopparty, S., Ron-Zewi, N., Saraf, S., Wootters, M.
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- **Bounds for List-Decoding and List-Recovery of Random Linear Codes** *IEEE TRANSACTIONS ON INFORMATION THEORY*
  Guruswami, V., Li, R., Mosheiff, J., Resch, N., Silas, S., Wootters, M.
  2022; 68 (2): 923-939
- **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**
  Guo, Z., Li, R., Shangguan, C., Tamo, I., Wootters, M., IEEE COMP SOC
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- **Asynchronous Distributed Optimization with Stochastic Delays**
  Glasgow, M., Wootters, M.
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- **Linear-Time Erasure List-Decoding of Expander Codes** *IEEE TRANSACTIONS ON INFORMATION THEORY*
  Ron-Zewi, N., Wootters, M., Zemor, G.
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  Li, R., Wootters, M.
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- **Embedded Index Coding**
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  IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2021: 1461–77
- **Weighted Matrix Completion From Non-Random, Non-Uniform Sampling Patterns** *IEEE TRANSACTIONS ON INFORMATION THEORY*
  Foucart, S., Needell, D., Pathak, R., Plan, Y., Wootters, M.
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  Adams, C., Agarwal, N., Allen, R., Khandhawit, T., Simons, A., Winarski, R., Wootters, M.
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- **Illusion of large on-chip memory by networked computing chips for neural network inference** *NATURE ELECTRONICS*
  Radway, R. M., Bartolo, A., Jolly, P. C., Khan, Z. F., Le, B. Q., Tandon, P., Wu, T. F., Xin, Y., Vianello, E., Vivet, P., Nowak, E., Wong, H., Aly, et al

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- **On Coding for an Abstracted Nanopore Channel for DNA Storage**
  Hulett, R., Chandak, S., Wootters, M., IEEE
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- **LOCAL LIST RECOVERY OF HIGH-RATE TENSOR CODES AND APPLICATIONS** *SIAM JOURNAL ON COMPUTING*
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  Dean, T. R., Perlstein, J. R., Wootters, M., Goldsmith, A. J.
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  Dean, T. R., Wootters, M., Goldsmith, A. J.
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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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- **Embedded Index Coding**
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- **Improved read/write cost tradeoff in DNA-based data storage using LDPC codes**
  Chandak, S., Tatwawadi, K., Lau, B., Mardia, J., Kubit, M., Neu, J., Griffin, P., Wootters, M., Weissman, T., Ji, H., IEEE
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  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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- **Linear-time list recovery of high-rate expander codes**
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- **Load-Balanced Fractional Repetition Codes**
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- **Improved decoding of Folded Reed-Solomon and Multiplicity Codes**
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- **On taking advantage of multiple requests in error correcting codes**
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- **Load-Balanced Fractional Repetition Codes**
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- **Improved decoding of Folded Reed-Solomon and Multiplicity Codes**
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- **Repairing Reed-Solomon Codes**
  Guruswami, V., Wootters, M.
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- **Repairing multiple failures for scalar MDS codes**
  Bartan, B., Wootters, M., IEEE
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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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- **Linear-Time List Recovery of High-Rate Expander Codes**
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- **Configuration spaces of convex and embedded polygons in the plane** *GEOMETRIAE DEDICATA*
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  Wootters, M., Plan, Y., Davenport, M. A., van den Berg, E., IEEE
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- **Local Correctability of Expander Codes**
  Hemenway, B., Ostrovsky, R., Wootters, M.
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- **REUSABLE LOW-ERROR COMPRESSIVE SAMPLING SCHEMES THROUGH PRIVACY**
  Gilbert, A. C., Hemenway, B., Strauss, M. J., Woodruff, D. P., Wootters, M., IEEE
  IEEE.2012: 536–39