Curriculum Vitae

Hsin-Po Wang 王新博

May 29, 2023

Website: https://www.symbol.codes/

Email:
- simple@berkeley.edu
- a.simple.people@gmail.com

I received a bachelor's degree in mathematics from National Taiwan University in 2015 and a Ph.D. degree in mathematics from the University of Illinois Urbana-Champaign in 2021. After spending a year as a postdoctoral researcher in the Department of ECE at UC San Diego, I am currently a postdoctoral researcher in the Department of EECS at UC Berkeley. I have worked on polar codes, distributed storage, distributed computation, and group testing. I am specialized at applying algebra, combinatorics, and calculus to these topics.

I Education

Ph.D in Mathematics 2016–2021
University of Illinois Urbana-Champaign
Advisor: Iwan Duursma
Dissertation: *Complexity and Second Moment of the Mathematical Theory of Communication*

Bachelor of Science in Mathematics 2011–2015
National Taiwan University (國立臺灣大學)

II Employments

Research Fellowship Spring 2024
Simons Institute for the Theory of Computing

Postdoctoral Scholar November 2022–Winter 2023
Department of Electrical Engineering and Computer Sciences
University of California, Berkeley

Postdoctoral Scholar October 2021–September 2022
Department of Electrical and Computer Engineering
University of California San Diego

III Research Interests

• Information theory • Coding theory • Polar codes • Distributed system • Group testing • Application of algebra, combinatorics, and calculus

IV Awards and Honors

Irving Reiner Memorial Award in Algebra	2021
Research Assistant Fellowship	Spring 2020
Teacher ranked as excellent by their students	Fall 2019, Spring 2019, Spring 2018
Book–Scroll Award (top 5% GPA)	Fall 2015, Spri 2014, Spri 2013, Fall 2012, Spri 2012, Fall 2011
Prof. Cheng-Tang Hsiao Memorial Scholarship (蕭正堂紀念獎學金)	2014
Prof. Ta-Kai Hu Memorial Scholarship (胡達開先生紀念獎學金)	2013

V Peer-Reviewed Conference Presentation

[1] H.-P. Wang, R. Gabrys, V. Guruswami. *Quickly-Decodable Group Testing with Fewer Tests: Price-Scarlett's Nonadaptive Splitting with Explicit Scalars*. IEEE International Symposium on Information Theory (ISIT). June 2023.

[2] H.-P. Wang, V. Guruswami. *How Many Matrices Should I Prepare to Polarize Channels Optimally Fast?*. IEEE International Symposium on Information Theory (ISIT). June 2023.

[3] T.-C. Lin, H.-P. Wang. *Optimal Self-Dual Inequalities to Order Polarized BECs*. IEEE International Symposium on Information Theory (ISIT). June 2023.

[4] H.-P. Wang, C.-W. Chin. *Density Devolution for Ordering Synthetic Channels*. IEEE International Symposium on Information Theory (ISIT). June 2023.

[5] H.-P. Wang, V.-F. Dragoi. *Fast Methods for Ranking Synthetic BECs*. IEEE International Symposium on Information Theory (ISIT). June 2023.

[6] I. Duursma, R. Gabrys, V. Guruswami, T.-C. Lin, H.-P. Wang. *Accelerating Polarization via Alphabet Extension*. International Conference on Randomization and Computation (RANDOM). September 2022. https://doi.org/10.4230/LIPIcs.APPROX/RANDOM.2022.17

[7] H.-P. Wang, R. Gabrys, A. Vardy. *PCR, Tropical Arithmetic, and Group Testing*. IEEE International Symposium on Information Theory (ISIT). June 2022. https://doi.org/10.1109/ISIT50566.2022.9834718

VI Journal Publications

[1] H.-P. Wang and R. Gabrys and A. Vardy. *Tropical Group Testing*. IEEE Transactions on Information Theory.

[2] H.-P. Wang, T.-C. Lin, A. Vardy, R. Gabrys. *Sub-4.7 Scaling Exponent of Polar Codes*. IEEE Transactions on Information Theory. https://doi.org/10.1109/TIT.2023.3253074

[3] I. Duursma, H.-P. Wang. *Multilinear Algebra for Minimum Storage Regenerating Codes: A Generalization of Product-Matrix Construction*. Applicable Algebra in Engineering, Communication and Computing. October 2021. https://doi.org/10.1007/s00200-021-00526-3

[4] I. Duursma, X. Li, H.-P. Wang. *Multilinear Algebra for Distributed Storage*. SIAM Journal on Applied Algebra and Geometry (SIAGA). September 2021. https://doi.org/10.1137/20M1346742

[5] H.-P. Wang, I. Duursma. *Log-logarithmic Time Pruned Polar Coding*. IEEE Transactions on Information Theory. March 2021. https://doi.org/10.1109/TIT.2020.3041523

[6] H.-P. Wang, I. Duursma. *Polar Codes' Simplicity, Random Codes' Durability*. IEEE Transactions on Information Theory. March 2021. https://doi.org/10.1109/TIT.2020.3041570