Pei Wu
Department of Computer Science
Weizmann Institute of Science

Research Interests

I am broadly interested in theoretical computer science. My recent focus is computational complexity theory and Boolean function analysis.

Positions

2023-present WEIZMANN INSTITUTE OF SCIENCE

Postdoctoral

Supervisor: Thomas Vidick

SUMMER,2023 SIMONS INSTITUTE FOR THE THEORY OF COMPUTING

Research Fellow

Program: Beyond the Boolean Cube

2021-2023 INSTITUTE FOR ADVANCED STUDY

Postdoctoral member

Supervisor: Avi Wigderson

Education

2015-2021 UNIVERSITY OF CALIFORNIA, LOS ANGELES

Ph.D., Computer Science

Thesis title: Communication and Computation

Advisor: Alexander Sherstov

2013-2015 DARTMOUTH COLLEGE

M.S., Computer Science

Thesis advisor: Amit Chakrabarti

2009-2013   NANJING UNIVERSITY, CHINA

Bachelor of Science, Computer Science and Technology

GPA: 89/100

Publications

Optimal interactive coding for insertions, deletions, and substitutions
A. A. Sherstov, P. Wu
The 58th Annual Symposium on Foundations of Computer Science (FOCS 2017)
IEEE Transactions on Information Theory, 65(10):5971–6000, 2019

Near-optimal lower bounds on the threshold degree and sign-rank of AC^0
A. A. Sherstov, P. Wu
The 51st ACM Symposium on Theory of Computing (STOC 2019)
Invited to appear in SIAM Journal on Computing (special issue for STOC 2019)

An optimal separation of randomized and quantum query complexity
A. A. Sherstov, A. A. Storozhenko, P. Wu
The 53rd ACM Symposium on Theory of Computing (STOC 2021)
SIAM Journal on Computing, 52(2):525-567, 2023

An optimal "it ain't over till it's over" theorem
R. Eldan, A. Wigderson, P. Wu
The 55th ACM Symposium on Theory of Computing (STOC 2023)

The power of unentangled proofs with non-negative amplitudes
F. G. Jeronimo, P. Wu
The 55th ACM Symposium on Theory of Computing (STOC 2023)

Dimension independent disentanglers from unentanglement and applications
F. G. Jeronimo, P. Wu

Manuscript

Subset states and Pseudorandom States
F. G. Jeronimo, N. Magrafta, P. Wu
Manuscript

Speaking Engagements

"The power of unentangled quantum proofs with non-negative amplitudes"

04/2023   Quantum Colloquium, Simons Institute, Berkeley, CA

04/2023   Quantum Seminar, Weizmann Institute of Science, Israel

05/2023   Quantum Seminar, University of Texas Austin, TX

05/2023   Theory Seminar, Nanjing University, China

01/2024   QIP 2024, January 13-19, Taipei

"Polynomial method in communication complexity"

11/2022   CS/DM Seminar, Institute for Advanced Study, Princeton, NJ

"Random restrictions on Boolean functions with small influences"

09/2022   Theory Lunch, Princeton University, Princeton, NJ

09/2022   Discrete Math Seminar, Shandong University, China

10/2022   Theory Seminar, Nanjing University, China

10/2022   DIMACS & Rutgers University, New Brunswick, NJ

11/2022   Discrete Math Seminar, Princeton University, Princeton, NJ

"It ain't over till it's over"

09/2022   Member's short talk, Institute for Advanced Study, Princeton, NJ

06/2023   STOC 2023, June 20-23, Orlando, FL

06/2023   "Analysis and TCS", Simons Institute, Berkeley, CA

"Recent progress on query complexity", two lectures

10/2021   CS/DM Seminar, Institute for Advanced Study, Princeton, NJ

"Black cats, white cats, and Shrödinger's cats"

09/2021   Member's short talk, Institute for Advanced Study, Princeton, NJ

"Optimal separation of randomized and quantum query complexity"

02/2021   QIP 2021, online

04/2021   Algorithm and Complexity Seminar (online), Waterloo University, Canada

06/2021   STOC 2021, online

"Settling the threshold degree and sign rank of AC^0

02/2020   Invited plenary talk, Southern California theory day, UC Riverside, California

"Near-optimal lower bounds on the threshold degree and sign rank of AC^0**"**

07/2019   STOC 2019, June 23-26, 2019 in Phoenix, Arizona

"Optimal interactive coding for insertions, deletions, and substitutions"

10/2017   FOCS 2017, October 15-17, 2017 in Berkeley, California

Awards

01/2020   Special issue invitation from SIAM Journal on Computing, for STOC 2019 paper "Near-Optimal Lower Bounds on the Threshold Degree and Sign-rank of AC0"

06/2020   Outstanding Graduate Student Research Award (Computer Science Department, UCLA)

10/2020   Dissertation Year Fellowship (Graduate Division, UCLA)

Other Services

Conference/journal review: ICALP, STOC/FOCS, CCC, Algorithmica, SICOMP, TIT, Quantum

Teaching assistant: CS 31 (Algorithms at Dartmouth College), CS 181 (Formal Language and Automata Theory at UCLA)