Pei Wu
School of Mathematics
Institute for Advanced Study

Research Interests

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

Positions

2021-PRESENT 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

Conference 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)

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)

An optimal "it ain't over till it's over" theorem
R. Eldan, A. Wigderson, P. Wu
Manuscript, under review

The power of unentangled proofs with non-negative amplitudes
F. G. Jeronimo, P. Wu
Manuscript, under review

Journal Publications

Optimal interactive coding for insertions, deletions, and substitutions
A. A. Sherstov, P. Wu
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
SIAM Journal on Computing (to appear)

Speaking Engagements

07/2019 ***"Near-optimal lower bounds on the threshold degree and sign rank of*** AC^0***"***
STOC 2019, June 23-26, 2019 in Phoenix, Arizona

10/2017 "***Optimal interactive coding for insertions, deletions, and substitutions***"
FOCS 2017, October 15-17, 2017 in Berkeley, California

02/2020 **"*Settling the threshold degree and sign rank of*** AC^0**"**
Invited plenary talk, Southern California theory day, UC Riverside, California

02/2021 **"*Optimal separation of randomized and quantum query complexity*"**
QIP 2021, online

04/2021 **"*Optimal separation of randomized and quantum query complexity*"**
Algorithm and Complexity Seminar (online), Waterloo University, Canada

06/2021 **"*Optimal separation of randomized and quantum query complexity*"**
STOC 2021, online

09/2021 **"*Black cats, white cats, and Shrödinger's cats*"**
Member's short talk, Institute for Advanced Study, Princeton, NJ

10/2021 ***"Recent progress on query complexity"***, two lectures
CS/DM Seminar, Institute for Advanced Study, Princeton, NJ

09/2022 **"*Random restrictions on Boolean functions with small influences*"**
Theory Lunch, Princeton University, Princeton, NJ

09/2022 **"*It ain't over till it's over*"**
Member's short talk, Institute for Advanced Study, Princeton, NJ

09/2022 **"*Random restrictions on Boolean functions with small influences*"**
Shandong University, China

10/2022 **"*Random restrictions on Boolean functions with small influences*"**
Nanjing University, China

10/2022 **"*Random restrictions on Boolean functions with small influences*"**
DIMACS & Rutgers University, New Brunswick, NJ

11/2022 **"*An optimial "it ain't over till it's over" theorem*"**
Discrete math seminar, Princeton University, Princeton, NJ

11/2022 **"*Polynomial method in communication complexity*"**
CS/DM Seminar, Institute for Advanced Study, Princeton, NJ

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

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