HAN HAO

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Google Scholar: https://scholar.google.com/citations?user=2OOZRtEAAAAJ

EDUCATION

Ph.D. in Computational Mathematics Sept. 2023 - Present
Tsinghua University Beijing, China
Supervisor: Hao Wu, Department of Mathematics, Tsinghua University.

Bachelor in Engineering Mechanics Aug. 2019
GPA: 3.87/4.00 (18/158) - Jun. 2023
Tsinghua University Beijing, China
Tsien Excellence in Engineering Program (for top 1% undergrads in Tsinghua)

PUBLICATIONS

- **Han Hao**, Dandan Jiang, Lu Yang, Hao Wu, Bo Bai, "The moment passing method for wireless channel capacity estimation", in *Proc. IEEE GLOBECOM 2022*, pp.3605-3610, 2022.
- **Han Hao**, Boxiang Ren, Chaowen Deng, Junyuan Wang, Hao Wu, "Double Splitting Model and Generalized Moment Passing Method for Network Capacity Computation", accepted by IEEE ICC 2024.
- Dandan Jiang, **Han Hao**, Lu Yang, Rui Wang, "TOSE: a fast capacity estimation algorithm based on spike approximations", in *Proc. IEEE VTC2022-Fall*, pp.1-6, 2022.
- Boxiang Ren, Chaowen Deng, **Han Hao**, Hao Wu, Junyuan Wang, "A Sequential Min K-Cut Approach for Sum Rate Maximization of Clustered Cell-free Networking", accepted by IEEE ICC 2024.
- Chengshuo Du, **Han Hao**, Mengyu Li, Tao Li, Cheng Meng, Jun Yu, "Ensemble Pruning Using Optimal Transport", preprint.
- Ziyuan Lyu, Boxiang Ren, **Han Hao**, Junyuan Wang, Hao Wu, "Sparsification Fixed-Point Algorithm for Efficient Ergodic Capacity Computation", preprint.

PROJECT

Average Capacity Calculation over Stochastic User Distribution with the Moment Passing Method

- Developed algorithms to efficiently estimate the average capacity of large wireless networks with any distribution of users
- Decreased the complexity of capacity estimation from $O(n^3)$ to $O(n)$ while maintaining 3% accuracy

Supervisor:
Hao Wu, Department of Mathematics, Tsinghua University.
Junyuan Wang, College of Electronic and Information Engineering, Tongji University.

The Moment Passing Method for Wireless Network Capacity Estimation

- Applied the random matrix theory (RMT) to design efficient algorithms for capacity estimation of large wireless networks
- Decreased the complexity of capacity estimation from $O(n^3)$ to $O(n^2)$ while maintaining 1% accuracy
- Combined Laurent expansion and Stieltjes transform with RMT, and derived the expressions of the moment of SINR matrices

Supervisor:
Hao Wu, Department of Mathematics, Tsinghua University.

AWARDS & HONORS

- Integrated excellence scholarship 2021-2023
- Scitific excellence scholarship 2021-2023

- National Training Team and Gold Medal, National Physics Olympiad Final (CPHO), rank 19 in China 2018

PROFESSIONAL SKILLS

- Experienced in MATLAB, python
- English – CET6: 540