

# Ke Wu

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## Research Interests

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- Cryptography, Game Theory, Coding Theory.

## Education

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- **Ph.D. student in Computer Science** *Aug 2020 – present*  
Carnegie Mellon University, Pittsburgh, PA  
Advisor: Elaine Shi
- **Ph.D. student in Computer Science** *Aug 2019 – Aug 2020*  
Cornell University, Ithaca, NY
- **M.S. in Computer Science** *Sep 2016 – Dec 2017*  
Johns Hopkins University, Baltimore, MD
- **B.S. in Mathematics** *Sep 2012 – Dec 2016*  
Fudan University, Shanghai, China

## Award

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CMU CyLab Presidential Fellowship 2022 – 2023.

## Publications (unless otherwise noted, authors are in alphabetical order)

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1. Elaine Shi, Hao Chung, Ke Wu (random author order).  
[What Can Crypto Do for Decentralized Mechanism Design?](#) In **ITCS 2023**.
2. Ilan Komargodski, Shin'ichiro Matsuo, Elaine Shi, Ke Wu.  
[log\\* -Round Game-Theoretically-Fair Leader Election](#). In **CRYPTO 2022**.
3. Ryan Gabrys, Venkatesan Guruswami and João Ribeiro, Ke Wu.

[Beyond Single-Deletion Correcting Codes: Substitutions and Transpositions.](#) In **RANDOM 2022**.

4. Ke Wu, Gilad Asharov, Elaine Shi (random author order).  
[A Complete Characterization of Game-Theoretically Fair, Multi-Party Coin Toss.](#) In **EUROCRYPT 2022**.
5. \*Ke Wu, Aaron B. Wagner (contribution order).  
[A Practical Coding Scheme for the BSC with Feedback.](#) In **ISIT 2021**.
6. Elaine Shi, Ke Wu.  
[Non-Interactive Anonymous Router.](#) In **EUROCRYPT 2021**.
7. Kuan Cheng, Bernhard Haeupler, Xin Li, Amirbehshad Shahrasbi, Ke Wu.  
[Synchronization strings: Highly efficient deterministic constructions over small alphabets.](#) In **SODA 2019**.
8. Kuan Cheng, Zhengzhong Jin, Xin Li, Ke Wu.  
[Edit Errors with Block Transpositions: Deterministic Document Exchange Protocols and Almost Optimal Binary Codes.](#) In **ICALP 2019**.
9. Kuan Cheng, Zhengzhong Jin, Xin Li, Ke Wu.  
[Deterministic document exchange protocols and almost optimal binary codes for edit errors.](#) In **FOCS 2018** and **Journal of the ACM**.

## Invited Talks

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- ***Beyond Single-Deletion Correcting Codes: Substitutions and Transpositions.***
  - Berkeley Security Seminar, Nov 2022
  - CMU Theory Lunch, Nov 2022
- ***Beyond Single-Deletion Correcting Codes: Substitutions and Transpositions.***
  - RANDOM, September 2022
- ***Log\*-Round Game-Theoretically-Fair Leader Election.***
  - CRYPTO, August 2022

- ***A Complete Characterization of Game-Theoretically Fair, Multi-Party Coin Toss.***
  - EUROCRYPT, May 2022
  - PL-meets-crypto workshop, May 2022
  - Stanford University, Security Seminar, May 2022
  - Carnegie Mellon University, Theory Lunch, April 2022
  - Bar-Ilan University, Theory Seminar, December 2021
- ***A Practical Coding Scheme for the BSC with Feedback.***
  - ISIT, July 2021
- ***Synchronization Strings: Efficient and Fast Deterministic Constructions Over Small Alphabets.***
  - SODA, January 2019
  - University of Maryland, Theory Seminar, December 2018
  - Johns Hopkins University, Theory Seminar, December 2018

## Professional Experience

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- **Research Intern, NTT Research, Inc.** *May 2022 – Aug 2022*  
Did research on transaction fee mechanisms.  
Supervisor: Elette Boyal.
- **Research Intern, NTT Research, Inc.** *May 2021 – Aug 2021*  
Did research on game-theoretically fair leader election with small round complexity.  
Supervisor: Ilan Komargodski.
- **Research Assistant, Johns Hopkins University** *Feb 2017 – Mar 2019*  
Conducted research on coding theory and cryptography, focusing on studying the error-correcting code and the document exchange protocol for edit errors.  
Supervisor: Xin Li.
- **Teaching Assistant**
  - Introduction to algorithms, Cornell University *2019 – 2020*

## Reviewing Activities

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- **Journal Reviewer:** Journal of Information Theory.
- **Conference Reviewer:** FOCS 2022, TCC 2022, SODA 2022, EUROCRYPT 2022.

## Services

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- Co-organizer of CMU CyLab crypto seminar:  
<https://sites.google.com/view/crypto-seminar/home>