

Wenhao Tang

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RESEARCH INTEREST

My research interest is in programming languages, in particular types and effects. My work mainly focuses on making it simpler to develop reliable software by designing expressive and practical type systems that provide strong static guarantees for resources and computational effects.

EDUCATION

The University of Edinburgh, Edinburgh, UK

Oct 2022 – July 2026 (Expected)

Ph.D. Student in Informatics

Supervisor: Dr. Sam Lindley

Peking University, Beijing, China

Sept 2018 – July 2022

B.S. in Computer Science and Technology (summa cum laude)

Supervisor: Prof. Zhenjiang Hu

PUBLICATIONS

Peer-Reviewed Conference and Journal Papers:

- POPL** **Wenhao Tang**, Sam Lindley. *Rows and Capabilities as Modal Effects*. In Principles of Programming Languages (POPL), 2026.
- OOPSLA** **Wenhao Tang**, Leo White, Stephen Dolan, Daniel Hillerström, Sam Lindley, Anton Lorenzen. *Modal Effect Types*. In Object-Oriented Programming, Systems, Languages & Applications (OOPSLA), 2025.
- JFP** **Wenhao Tang**, Tom Schrijvers. *From High to Low: Simulating Nondeterminism and State with State*. In Journal of Functional Programming (JFP), Volume 34, e16, 2025.
- LMCS** Roger Bosman*, Birthe van den Berg*, **Wenhao Tang***, Tom Schrijvers. *A Calculus for Scoped Effects & Handlers*. In Logical Methods in Computer Science (LMCS), Volume 20, Issue 4, 2024
- POPL** **Wenhao Tang**, Daniel Hillerström, Sam Lindley, J. Garrett Morris. *Soundly Handling Linearity*. In Principles of Programming Languages (POPL), 2024. **ACM SIGPLAN Distinguished Paper Award**.
- OOPSLA** **Wenhao Tang**, Daniel Hillerström, James McKinna, Michel Steuwer, Ornela Dardha, Rongxiao Fu, Sam Lindley. *Structural Subtyping as Parametric Polymorphism*. In Object-Oriented Programming, Systems, Languages & Applications (OOPSLA), 2023.
- JFP** Hanliang Zhang, **Wenhao Tang**, Ruifeng Xie, Meng Wang, Zhenjiang Hu. *Contract Lenses: Reasoning about Bidirectional Programs via Calculation*. In Journal of Functional Programming (JFP), Volume 33, e10, 2023.

Peer-Reviewed Extended Abstracts:

- ML Family** **Wenhao Tang**, Shengyi Jiang, Bruno C. d. S. Oliveira, Sam Lindley. *Freezing Bidirectional Typing*. In the ML Family Workshop, 2025.
- HOPE** **Wenhao Tang**, Sam Lindley. *Rows and Capabilities as Modal Effects*. In the Workshop on Higher-Order Programming with Effects (HOPE), 2025.
- POPL SRC** **Wenhao Tang**. *Session-Typed Effect Handlers*. In the Student Research Competition of POPL, 2024.

(* represents equal contributions)

AWARDS

- Distinguished Paper Award, POPL 2024
 - Third Place in the ACM Student Research Competition (Graduate Category)
 - School of Informatics PhD Scholarship
- ACM SIGPLAN, 2024
ACM, 2024
The University of Edinburgh, 2022

- John Hopcroft Scholarship Peking University, 2021
- Award for Academic Excellence Peking University, 2020

RESEARCH INTERNSHIPS

KU Leuven, Leuven, Belgium June 2021 – Sept 2021

Research Intern, supervised by Prof. Tom Schrijvers

Topics: Algebraic and scoped effects.

Peking University, Beijing, China May 2020 – Aug 2022

Research Assistant, supervised by Prof. Zhenjiang Hu

Topics: Bidirectional transformation and program calculation.

ACADEMIC SERVICE

- **Program Committee**, Implementation and Application of Functional Languages (IFL) 2025
- **Reviewer**, Journal of Functional Programming (JFP) 2025

TEACHING

- **TA**, *Elements of Programming Languages* The University of Edinburgh, Fall 2024
- **TA and Tutor**, *Elements of Programming Languages* The University of Edinburgh, Fall 2023
- **TA and Tutor**, *Elements of Programming Languages* The University of Edinburgh, Fall 2022
- **TA**, *Introduction to Computer Systems* Peking University, Fall 2020

TALKS

- *Rows and Capabilities as Modal Effects*. HOPE Workshop 2025, Singapore. Oct 2025
- *Freezing Bidirectional Typing*. ML Family Workshop 2025, Singapore. Oct 2025
- *Modal Effect Types*. OOPSLA 2025, Singapore. Oct 2025
- *Modal Effect Types*. EHOP Workshop 2025, Edinburgh, UK. Aug 2025
- *Effects, Linearity, and Modalities*. Seminar, Peking University, Beijing, China. Aug 2024
- *Effects, Linearity, and Modalities*. Seminar, Shanghai Jiao Tong University, Shanghai, China. Aug 2024
- *Soundly Handling Linearity*. TUPLE 2024, The University of Edinburgh, Edinburgh, UK. Feb 2024
- *Soundly Handling Linearity*. POPL 2024, London, UK. Jan 2024
- *Structural Subtyping as Parametric Polymorphism*. OOPSLA 2023, Cascais, Portugal. Oct 2023
- *Soundly Handling Linearity*. Seminar, University of Bristol, UK. Oct 2023
- *Soundly Handling Linearity*. EHOP Workshop 2023, Edinburgh, UK. July 2023
- *Tracking Linear Continuations for Effect Handlers*. Huawei-Edinburgh Joint Lab Workshop, UK. June 2023
- *Tracking Linear Continuations for Effect Handlers*. SPLS, Heriot-Watt University, Edinburgh, UK. March 2023

SOFTWARE

- **Links**: Linking Theory to Practice for the Web. <https://links-lang.org>
I implemented the extension of control-flow linearity in Links.
- **METL**: A language with modal effect types. <https://github.com/thwfhk/met-oopsla25-artifact>
I was the primary developer of the prototype language METL.
- λ_{sc} : A calculus for scoped effects and handlers. <https://github.com/thwfhk/lambdaSC>
I was the primary developer of the prototype language λ_{sc} .