

## Work experience

- From 2023 **Postdoctoral Researcher**, *Saarland University*, Germany.  
Research project 'Automata, Dynamics and Actions (ADA)', with Laurent Bartholdi.
- Springs 2021 **Research Intern**, *Laboratoire Informatique de l'Ecole Polytechnique*, France.  
and 2020 Research team MAX (Algebraic modeling and symbolic computation).
- Summer 2019 **Intern**, *Phimeca Engineering*, France.

## Education

- 2021–2023 **DPhil, Computer Science**, *University of Oxford*, UK.  
– Thesis title: *Algorithmic Problems for Subsemigroups of Infinite Groups*.  
– Supervisors: Christoph Haase, James Worrell.
- 2020–2021 **MSc, Parisian Master of Research in Computer Science (MPRI)**, *Université de Paris*, France.  
– Master's thesis: *Computing Error Bounds for Asymptotic Expansions of Regular P-Recursive Sequences*.
- 2017–2021 **Diplôme d'Ingénieur**, *Ecole Polytechnique*, France.  
– Dissertation: *Computing input-output projections of dynamical models with applications to structural identifiability*.
- 2014–2018 **BSc, Mathematics**, *Peking University*, China.  
– Bachelor's thesis: *The Tensor Product Canonical Form Calculation Optimized by Graph Isomorphism Algorithm*.

## Awards and Honours

- Kleene Award for the Best Student Paper**, *LICS 2023*.  
**Best Student Paper Award (Track B)**, *ICALP 2023*.

## Publications and Preprints

### Preprints

Ruiwen Dong. Semigroup algorithmic problems in metabelian groups. 2023. <https://arxiv.org/abs/2304.12893>.

### Peer-reviewed articles

Ruiwen Dong. The Identity Problem in nilpotent groups of bounded class. In *35th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2024. To appear.

Ruiwen Dong. Recent advances in algorithmic problems for semigroups. *ACM SIGLOG News*, 2023. To appear.

Ruiwen Dong, Stephen Melczer, and Marc Mezzarobba. Computing error bounds for asymptotic expansions of regular P-recursive sequences. *Mathematics of Computation*, 2023.

Ruiwen Dong. Termination of linear loops under commutative updates. In *Proceedings of the 2023 International Symposium on Symbolic and Algebraic Computation (ISSAC)*, 2023.

Ruiwen Dong. The Identity Problem in  $\mathbb{Z} \wr \mathbb{Z}$  Is Decidable. In *50th International Colloquium on Automata, Languages, and Programming (ICALP)*, 2023. **Best Student Paper Award for Track B**.

Ruiwen Dong. The Identity Problem in the special affine group of  $\mathbb{Z}^2$ . In *38th Annual ACM/IEEE Symposium on Logic in Computer Science (LICS)*, 2023. **Kleene Award for the Best Student Paper**.

Ruiwen Dong, Christian Goodbrake, Heather A. Harrington, and Gleb Pogudin. Differential elimination for dynamical models via projections with applications to structural identifiability. *SIAM Journal on Applied Algebra and Geometry*, 2023.

Ruiwen Dong. Solving homogeneous linear equations over polynomial semirings. In *40th International Symposium on Theoretical Aspects of Computer Science (STACS)*, 2023.

Ruiwen Dong. Semigroup intersection problems in the Heisenberg Groups. In *40th International Symposium on Theoretical Aspects of Computer Science (STACS)*, 2023.

Ruiwen Dong. On the Identity Problem for unitriangular matrices of dimension four. In *47th International Symposium on Mathematical Foundations of Computer Science (MFCS)*, 2022.

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## Conference talks

July 2023 **ISSAC 2023**, Tromsø, Norway.

Termination of linear loops under commutative updates

July 2023 **ICALP 2023**, Paderborn, Germany.

The Identity Problem in  $\mathbb{Z} \wr \mathbb{Z}$  Is Decidable

June 2023 **LICS 2023**, Boston, USA.

The Identity Problem in the special affine group of  $\mathbb{Z}^2$

March 2023 **STACS 2023**, Hamburg, Germany.

Semigroup intersection problems in the Heisenberg Groups

March 2023 **STACS 2023**, Hamburg, Germany.

Solving homogeneous linear equations over polynomial semirings

October 2022 **RP 2022**, MPI-SWS Kaiserslautern, Germany.

On the Identity Problem for unitriangular matrices of dimension four

August 2022 **MFCS 2022**, Vienna, Austria.

On the Identity Problem for unitriangular matrices of dimension four

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## Seminar and workshop talks

June 2023 **AG1 Mittagseminar**, Max Planck Institute for Informatics, Saarbrücken, Germany.

Decision problems in sub-semigroups of metabelian groups

May 2023 **Logic Advanced Class**, Mathematical Institute, University of Oxford, UK.

Decision problems in sub-semigroups of metabelian groups

May 2023 **Algorithmic Aspects of Dynamical Systems**, Bellairs Research Institute, Barbados.

Decidability problems in infinite semigroups

October 2022 **OFCOURSE series**, MPI-SWS Kaiserslautern, Germany.

The Identity Problem for unitriangular matrices of dimension four

May 2022 **Verification series seminar**, University of Liverpool, UK.

On the Identity Problem for unipotent matrix groups of nilpotency class at most ten

March 2022 **IRIF verification seminar**, IRIF, France.

The Identity Problem for unitriangular matrices of dimension four

October 2020 **MAX team seminar**, Ecole Polytechnique, France.

A new algorithm for finding the input-output equations of differential models

## Reviewing work

ICALP, SODA, LICS, STACS, Information and Computation

## Languages

Chinese Native, C2

French Fluent, C2

Polish Fluent, C1

English Fluent, C2

Russian Fluent, C1

Turkish Intermediate, B2

## Programming languages and software

Python, Julia, C, C++, Java, R, Sage