

## Education

- 2021–2023 **DPhil (PhD), Computer Science, University of Oxford, UK.**  
(Expected) – Research title: Algorithmic problems in infinite semigroups.  
– 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 Standard Type Calculation Optimized by Graph Isomorphism Algorithm.*

## Awards and Honours

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

## Publications and Preprints

### Preprints

- 2023 Ruiwen Dong. Semigroup algorithmic problems in metabelian groups. 2023. <https://arxiv.org/abs/2304.12893>.
- 2022 Ruiwen Dong, Stephen Melczer, and Marc Mezzarobba. Computing error bounds for asymptotic expansions of regular P-recursive sequences. 2022. <https://arxiv.org/abs/2212.11742>.
- 2022 Ruiwen Dong. On the Identity Problem and the Group Problem in nilpotent groups. 2022. <https://arxiv.org/abs/2208.02164>.

### Peer-reviewed articles

- 2023 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*, volume 7, pages 194–235. SIAM, 2023.
- 2023 Ruiwen Dong. Termination of linear loops under commutative updates. 2023. To appear in 48th International Symposium on Symbolic and Algebraic Computation, ISSAC. <https://doi.org/10.48550/arXiv.2302.01003>.
- 2023 Ruiwen Dong. Solving homogeneous linear equations over polynomial semirings. In *40th International Symposium on Theoretical Aspects of Computer Science, STACS*, volume 254 of *LIPIcs*, pages 26:1–26:19, 2023.
- 2023 Ruiwen Dong. Semigroup intersection problems in the Heisenberg Groups. In *40th International Symposium on Theoretical Aspects of Computer Science, STACS*, volume 254 of *LIPIcs*, pages 25:1–25:18, 2023.
- 2023 Ruiwen Dong. The Identity Problem in the special affine group of  $\mathbb{Z}^2$ . 2023. To appear in 38th ACM/IEEE Symposium on Logic in Computer Science, LICS. **Kleene Award for the Best Student Paper.** <https://arxiv.org/abs/2301.09502>.

- 2023 Ruiwen Dong. The Identity Problem in  $\mathbb{Z} \wr \mathbb{Z}$  is decidable. 2023. To appear in 50th EATCS International Colloquium on Automata, Languages and Programming, ICALP. **Best Student Paper Award in Track B**. <https://doi.org/10.48550/arXiv.2302.05939>.
- 2022 Ruiwen Dong. On the Identity Problem for unitriangular matrices of dimension four. In *47th International Symposium on Mathematical Foundations of Computer Science, MFCS*, volume 241 of *LIPIcs*, pages 43:1–43:14, 2022.

## Work experience

- March 2021, 6 months **Research Internship**, *Laboratoire Informatique de l'Ecole Polytechnique*, France.  
Asymptotic expansions of P-Recursive sequences. Supervisors: Stephen Melczer, Marc Mezzarobba.
- March 2020, 6 months **Research Internship**, *Laboratoire Informatique de l'Ecole Polytechnique*, France.  
Differential algebra and applications to structural identifiability. Supervisors: Gleb Pogudin, Heather Harrington. Laureate for *Prix du centre de recherche*.
- June 2019, 3 months **Industrial Internship**, *Phimeca Engineering*, France.  
Application of statistical learning in simulations of atmospheric dispersion of pollutants.

## Conference talks

- March 2023 **STACS 2022**, *Hamburg*, Germany.  
Semigroup intersection problems in the Heisenberg Groups
- March 2023 **STACS 2022**, *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

## Seminar and workshop talks

- 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
- April 2019 **Centre de Mathématiques Appliquées**, *Ecole Polytechnique*, France.  
A generalization of the preferential attachment model in graph theory

## Reviewing work

ICALP 2022, SODA 2022, LICS 2023

## Languages

Chinese Native, C2

English Fluent, C2

French    Fluent, C2

Polish    Fluent, C1

Russian    Fluent, C1

Turkish    Intermediate, B2

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## Programming languages and software

Python, Julia, C, C++, Java, R, MatLab, Sage, Git, LaTeX