Ruiwen Dong

Department of Computer Science, 7 Parks Rd
Oxford OX1 3QG, United Kingdom
+44 7729597790
ruiwen.dong@kellogg.ox.ac.uk

Education

2021–2023 (Expected) **DPhil (PhD), Computer Science**, *University of Oxford*, UK.
– Supervisors: Christoph Haase, James Worrell.

2020–2021 **MSc (M2), *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*.

Publications and Preprints

Preprints

2023 Ruiwen Dong. Termination of linear loops under commutative updates. 2023. `https://doi.org/10.48550/arXiv.2302.01003`.

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. 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. `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. `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.
Research in asymptotic expansions of P-Recursive sequences.

March 2020, 6 months — **Research Internship**, *Laboratoire Informatique de l'Ecole Polytechnique*, France.
Research in differential algebra.

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 talks

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	Russian	Fluent, C1
Polish	Fluent, C1	Turkish	Intermediate, B2

Programming languages and software

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