

Tulasimohan Molli

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Faculdade de Ciências, Universidade de Lisboa

Tulasimohan Molli is currently a postdoctoral researcher at the Faculty of Sciences, University of Lisbon, and an integrated researcher at LASIGE, a research unit at FCUL.

Research Interests

Broadly interested in Theory of Computing including areas like Complexity Theory, Circuit Complexity, Analysis of Boolean Functions, Communication Complexity, Query Complexity, Data Structures.

Education

Tata Institute of Fundamental Research, Mumbai

PhD in Computer Science

Junior Research Fellow (JRF)

2014–2016

Senior Research Fellow (SRF)

2016–2023

Thesis: On Complexity Measures of Boolean functions

Advisor: Prof. Prahladh Harsha

Chennai Mathematical Institute, Chennai

2012–2014

MSc in Computer Science

Chennai Mathematical Institute, Chennai

2009–2012

BSc (Honours) in Mathematics and Computer Science

Employment

- **Postdoctoral Researcher**, University of Lisbon (FCUL), Portugal Jul 2023–present
- **Visiting Scientist**, IISER Berhampur (Discrete Structures and Computation) Jan–May 2022

Publications

1. Prahladh Harsha, Tulasimohan Molli, Ashutosh Shankar.
Criticality of AC^0 -Formulae.
In: 38th Computational Complexity Conference (CCC 2023), LIPIcs, Vol. 264, pp. 19:1–19:24.
<https://doi.org/10.4230/LIPIcs.CCC.2023.19>
2. Siddharth Bhandari, Prahladh Harsha, Tulasimohan Molli, Srikanth Srinivasan.
On the probabilistic degree of OR over the reals.
Random Structures and Algorithms, 59(1): 53–67, 2021.
<https://doi.org/10.1002/rsa.20991>
3. Sourav Chakraborty, Nikhil S. Mande, Rajat Mittal, Tulasimohan Molli, Manaswi Paraashar, Swagato Sanyal.
Tight Chang's-lemma-type bounds for Boolean functions.
CoRR, abs/2012.02335, 2020.
<https://arxiv.org/abs/2012.02335>
4. Siddharth Bhandari, Prahladh Harsha, Tulasimohan Molli, Srikanth Srinivasan.
On the Probabilistic Degree of OR over the Reals.
In: 38th IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2018), LIPIcs, Vol. 122, pp. 5:1–5:12.
<https://doi.org/10.4230/LIPIcs.FSTTCS.2018.5>

Teaching

- Discrete Structures and Computation (Undergraduate course)
IISER Berhampur, Jan–May 2022
- Teaching Assistant for courses on Discrete Mathematics and Theory of Computation.
Chennai Mathematical Institute

Academic Projects

- **Qualifier project On Lower Bounds for Depth-2 Circuits with Threshold and MOD Gates**
Supervisor: Prof. Arkadev Chattopadhyay, TIFR
- **Master's Thesis on Structural Results in Arithmetic Circuit Complexity**
Supervisor: Prof. Srikanth Srinivasan, IIT Bombay
- **Randomized Query Complexity of Recursive Majority**
With Prof. Prahladh Harsha
- **Weight Distribution and Capacity Achievability of Reed-Muller Codes in BEC**
With Siddharth Bhandari, Prahladh Harsha, Ramprasad Saptharishi

Technical Skills

- Programming: Python, LaTeX
- Tools: Zotero, Git, Obsidian, Notion, Quarto

Professional Service

- Reviewer for: STOC, CCC, STACS and SICOMP.
- Organised Annual STCS Day Seminars and Weekly Student Seminars during PhD at TIFR.
- Took part in TIFR outreach program for popularizing science among high school students in and around Mumbai.

References

- **Prof. Prahladh Harsha**
Tata Institute of Fundamental Research
<https://www.tcs.tifr.res.in/prahladh/>
Email: prahladh@tifr.res.in
- **Prof. Jaikumar Radhakrishnan**
Tata Institute of Fundamental Research
<https://www.icts.res.in/people/jaikumar-radhakrishnan1>
Email: jaikumar.radhakrishnan@icts.res.in
- **Prof. Bruno Loff**
Faculty of Sciences, University of Lisbon
<https://brunoloff.wordpress.com/>
Email: bruno.loff@gmail.com