

# 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 positions

- **Visiting Researcher**, Weizmann Institute of Science, Rehovot, Israel. May–June 2018
- **Visiting Scientist**, IISER Berhampur, Odisha, India. 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'23, CCC'19, STACS'21 and SICOMP(Journal).
- 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  
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Email: bruno.loff@gmail.com