

# CHAKRABORTY

Dipayan

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*Research interests: identification problems in graphs, domination numbers, graph colorings, graph homomorphisms, radio labeling, graph modification problems*

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## Current position

January, 2022–till date **Ph.D in Computer Science — Algorithmique et structure des problèmes d'identification (Algorithmics and structures of identifications problems)**, *Laboratoire d'Informatique, de Modélisation et d'Optimisation des Systèmes (LIMOS), Université Clermont Auvergne, France*

Director **Annegret WAGLER**, *LIMOS, Université Clermont Auvergne, France*

Co-supervisor **Florent FOUCAUD**, *LIMOS, Université Clermont Auvergne, France*

Research associate to **Michael HENNING**, *Department of Mathematics and Applied Mathematics, University of Johannesburg, South Africa*

## Previous positions

January – December, 2021 **Junior Research Fellow (JRF)**, *under SERB-SRG funded project titled "Complexity dichotomies of graph modification problems", Department of Computer Science and Engineering, Indian Institute of Technology Dharwad, Karnataka, India*

2016–2020 **Teaching Faculty (Mathematics)**, *Department of Basic Science & Humanities, Gargi Memorial Institute of Technology, Maulana Abul Kalam Azad University of Technology, Baruiapur, Kolkata, India*

2015–2016 **Visiting faculty (Engineering Mathematics)**, *Department of Mathematics, Government College of Engineering and Ceramic Technology, Maulana Abul Kalam Azad University of Technology, Kolkata, India*

## Educational trainings

2009–2012 **Master in Mathematics (ALGANT Erasmus Mundus)**, *University of Bordeaux, France (first year) – University of Padova, Italy (second year)*

2004–2007 **Bachelor of Science (Hons. in Mathematics)**, *St. Xavier's College, Kolkata, University of Calcutta, Kolkata, India*

## Journal Publications

Published **On clique numbers of colored mixed graphs**, DC, Sandip Das, Soumen Nandi, Debdeep Roy and Sagnik Sen, *Discrete Applied Mathematics 324: 29-40 (2023)*  
<https://doi.org/10.1016/j.dam.2022.08.013>

- Submitted **Identifying codes in graphs of given maximum degree. II. Triangle-free graphs**, DC, Florent Foucaud, Michael Henning and Tuomo Lehtilä  
Manuscript, 2024
- Submitted **Identifying codes in graphs of given maximum degree. I. Trees**, DC, Florent Foucaud, Michael Henning and Tuomo Lehtilä  
Manuscript, 2024
- Submitted **Progress towards the two-thirds conjecture on locating-total-dominating sets**, DC, Florent Foucaud, Anni Hakanen, Michael Henning and Annegret Wagler  
Manuscript, 2022
- Submitted **On three domination-based identification problems in block graphs**, DC, Florent Foucaud, Aline Parreau and Annegret Wagler  
Manuscript, 2023

## Conference proceedings

- May, 2024 **Open-separating dominating codes in graphs**, DC and Annegret K. Wagler, *8th International Symposium on Combinatorial Optimization (ISCO), May 2024, Tenerife, Canary Islands, Spain*
- February, 2024 **Location-Domination Type Problems Under the Mycielski Construction**, Silvia M. Bianchi, DC, Yanina Lucarini and Annegret K. Wagler, *10th International Conference on Algorithms and Discrete Applied Mathematics (CALDAM), Feb 2024, Bhilai, India*  
[https://doi.org/10.1007/978-3-031-52213-0\\_18](https://doi.org/10.1007/978-3-031-52213-0_18)
- September, 2023 **Contracting edges to destroy a pattern: A complexity study**, DC and Sandeep R.B., *24th International Symposium on Fundamentals of Computation Theory (FCT 2023), September, 2023, Trier, Germany*  
[https://doi.org/10.1007/978-3-031-43587-4\\_9](https://doi.org/10.1007/978-3-031-43587-4_9)
- September, 2023 **Identifying codes in bipartite graphs of given maximum degree**, with DC, Florent Foucaud, Tuomo Lehtilä, *XII Latin-American Algorithms, Graphs and Optimization Symposium (LAGOS 2023), September 2023, Huatulco, Mexico*  
<https://doi.org/10.1016/j.procs.2023.08.225>
- June, 2023 **A linear algorithm for radio  $k$ -coloring powers of paths having small diameter**, DC, Soumen Nandi, Sagnik Sen and DK Supraja, *34th International Workshop on Combinatorial Algorithms (IWOCA 2023), June 2023, Tainan, Taiwan. pp.148-159*  
[https://doi.org/10.1007/978-3-031-34347-6\\_13](https://doi.org/10.1007/978-3-031-34347-6_13)
- February, 2023 **On three domination-based identification problems in block graphs**, DC, Florent Foucaud, Aline Parreau and Annegret Wagler, *9th International Conference on Algorithms and Discrete Applied Mathematics (CALDAM 2023), Feb 2023, Gandhinagar, India. pp.271-283*  
[https://doi.org/10.1007/978-3-031-25211-2\\_21](https://doi.org/10.1007/978-3-031-25211-2_21)
- February, 2023 **New bounds and constructions for neighbor-locating colorings of graphs**, DC, Florent Foucaud, Soumen Nandi, Sagnik Sen and DK Supraja, *9th International Conference on Algorithms and Discrete Applied Mathematics (CALDAM 2023), Feb 2023, Gandhinagar, India. pp.121-133*  
[https://doi.org/10.1007/978-3-031-25211-2\\_21](https://doi.org/10.1007/978-3-031-25211-2_21)

## Ongoing research

- **Locating-dominating sets for subcubic graphs**, *with* Anni Hakanen and Tuomo Lehtilä
- **Characterizing extremal digraphs for total dominating identifying codes**, *with* Florent Foucaud, Narges Ghareghani and Pouyeh Sharifani
- **Parameterized complexities of locating-dominating sets with above-guarantee parameters**, *with* Florent Foucaud, Diptapriyo Majumdar and Prafullkumar Tale

## Conferences Presentations & Summer Schools

- February, 2024 **10th International Conference on Algorithms and Discrete Applied Mathematics**, (CALDAM 2023)  
Hosted by: IIT Bhilai, Chhattisgarh, India
- September, 2023 **XII Latin-American Algorithms, Graphs and Optimization Symposium**, (LAGOS 2023)  
Hosted by: Instituto de Matemáticas, UNAM, Juriquilla, Mexico
- June, 2023 **CIMPA Research School on Graph Structure and Complex Network Analysis**, (CIMPA GSCN 2023)  
Hosted by: Nesin Mathematics Village, Sirinçe, Izmir, Turkey
- February, 2023 **9th International Conference on Algorithms and Discrete Applied Mathematics**, (CALDAM 2023)  
Hosted by: DAIICT, Gandhinagar, India
- September, 2022 **Maribor Graph Theory Conference**, (MGTC 2022)  
Hosted by: Faculty of Natural Sciences and Mathematics, University of Maribor, Slovenia
- July, 2022 **11th International Colloquium on Graph Theory and Combinatorics**, (ICGT 2022)  
Hosted by: LIRMM, Montpellier, France
- June, 2022 **School on Graph Theory, Murol, France**, (SGT 2022)  
Organized by: LIMOS, Université Clermont Auvergne, France
- May, 2021 **Annual Meeting of Homomorphisms of Signed Graphs**, (HOSIGRA 2021)  
Hosted by: University of Bordeaux, University of Montpellier and University of Paris Diderot, France

## Review Contributions

- Conference **International Conference on Algorithms and Discrete Applied Mathematics**, *CALDAM*  
**International Workshop on Combinatorial Algorithms**, *IWOCA*  
**Latin-American Algorithms, Graphs and Optimization Symposium**, *LAGOS*  
**International Conference on Current Trends in Theory and Practice of Computer Science**, *SOFSEM*
- Journal **Fundamenta Informaticae**  
**The Australasian Journal of Combinatorics**

## Academic Events

- Organizing Committee (March, 2024) **41st International Symposium on Theoretical Aspects of Computer Science**, *Clermont-Ferrand, France*, (STACS 2024)  
Hosted by: Université Clermont-Auvergne

## Theses

Master thesis, **Mordell-Weil theorems & the Birch and Swinnerton-Dyer conjecture**, *Università degli Studi di Padova*, Italy

Supervisor **Matteo LONGO**, *Università degli Studi di Padova*, Italy

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## Courses Taught

2022 **IUT Clermont Auvergne**, *Université Clermont Auvergne*, Aubière, France

- **Methodes d'Optimisation**

le Bachelor Universitaire de Technologie (BUT) Informatique – 2nd year

2016–2020 **Gargi Memorial Institute of Technology (GMIT)**, *under Maulana Abul Kalam Azad University of Technology (MAKAUT)*, Kolkata, India

- **Mathematics-I A & B** (Single & Multivariate Calculus || Linear algebra)

Bachelor of Technology. (B. Tech) – 1st year

- **Mathematics-II A & B** (Probability & Statistics || Multivariate Calculus || Differential Equations || Complex Analysis)

Bachelor of Technology (B. Tech) – 1st year

- **Mathematics-III** (Differential Calculus || Differential Equations || Partial Differential Equations || Integral Transforms || Probability & Statistics)

Bachelor of Technology (B. Tech) – 2nd year

- **Mathematics-IV** (Numerical Methods || Abstract Algebra || Basics of Graph Theory)

Bachelor of Technology (B. Tech) – 2nd year

2015–2016 **Government College of Engineering & Ceramic Technology (GCECT)**, *under Maulana Abul Kalam Azad University of Technology (MAKAUT)*, Kolkata, India

- **Engineering Mathematics** (Probability || Fourier Analysis || Integral Transforms || Ordinary & Partial Differential Equations)

Bachelor of Technology (B. Tech) – 2nd year

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## References

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- **Annegret WAGLER**, *LIMOS, Université Clermont Auvergne, France*

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- **Sagnik SEN**, *Indian Institute of Technology Dharwad, Karnataka, India*

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