

# 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*

### 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, Baruipur, 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*

### 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 **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

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## Conference proceedings

Accepted **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

Accepted **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

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)

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## Ongoing research

- **Characterizing extremal digraphs for total dominating identifying codes**, with Florent Foucaud, Narges Ghareghani and Pouyeh Sharifani
- **Newer classes of domination-based identifying problems in graphs**, with Florent Foucaud and Annegret Wagler
- **Parameterized complexities of locating-dominating sets with above-guarantee parameters**, with Florent Foucaud and Diptapriyo Majumdar

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## Talks, Conferences Presentations & Summer Schools

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: Dhirubhai Ambani Institute of Information and Communication Technology, 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–Laboratoire d’informatique, de robotique et de microélectronique de 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*
- Journal **Fundamental Informaticae**  
**Australian 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, 2012 **Mordell-Weil theorems & the Birch and Swinnerton-Dyer conjecture**, *Università degli Studi di Padova*, Italy  
Supervisor **Matteo LONGO**, *Università degli Studi di Padova*, Italy

## 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

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