

# Dipayan CHAKRABORTY

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<https://dipayan5186.github.io/Website/>

**Research domains:** *identification problems in graphs, dominating sets, graph modification problems, graph algorithms, computational & parameterized complexity*

last updated : 12 octobre 2025

## Professional experience

- Sep. 2025 - till date **Assistant Professor (ATER in the French higher education system)**, Centrale Méditerranée, Marseille – Laboratoire d’Informatique et Systèmes (LIS), Aix-Marseille University, France
- Feb. 2025 - Aug. 2025 **Post-doctorate** (supervisor : **Faisal N. Abu-Khzam**), Department of Computer Science and Mathematics, Lebanese American University, Lebanon
- Jan. 2022 - Janv. 2025 **PhD scholar**, Laboratoire d’Informatique, de Modélisation et d’Optimisation des Systèmes (LIMOS), Université Clermont Auvergne, France  
Director **Annegret WAGLER**, Professor, Université Clermont Auvergne, France  
Co-supervisor **Florent FOUCAUD**, Associate Professor, Université Clermont Auvergne, France  
Co-supervisor **Michael HENNING**, Professor, University of Johannesburg, South Africa
- Jan. 2023 - Jan. 2025 **Reseach associate** (academic host : **Michael Henning**), Department of Mathematics and Applied Mathematics, University of Johannesburg, South Africa
- Oct. 2022 - Nov. 2024 **Part-time lecturer**, Institut universitaire de technologie (IUT), Université Clermont Auvergne, France
- Jan. 2021 - Dec. 2021 **Contractual researcher**, as part of the project funded by SERB-SRG and titled "Complexity dichotomies of graph modification problems", Department of Computer Science and Engineering, Indian Institute of Technology Dharwad, Karnataka, India
- Aug. 2016 - Dec. 2020 **Teaching faculty of mathematics**, Department of Basic Science & Humanities, Gargi Memorial Institute of Technology, Maulana Abul Kalam Azad University of Technology, Baruipur, Kolkata, India
- Jul. 2015 - Jul. 2016 **Visiting lecturer in applied engineering mathematics**, Department of Mathematics, Government College of Engineering and Ceramic Technology, Maulana Abul Kalam Azad University of Technology, Kolkata, India

## Education and Trainings

- Jan. 2022 - Jan. 2025 **PhD in Computer Science** (defended 9th December 2024)  
Thesis title **Structural and algorithmic aspects of identification problems in graphs**  
Laboratoire d’Informatique, de Modélisation et d’Optimisation des Systèmes (LIMOS), Université Clermont Auvergne, France  
PhD Jury  
Director **Annegret Wagler**, Professor, Université Clermont Auvergne, France  
Co-supervisor **Florent Foucaud**, Associate professor, Université Clermont Auvergne, France  
Co-supervisor **Michael Henning**, Professor, University of Johannesburg, South Africa
- President & Examiner **Paul Dorbec**, Professor, Université de Caen-Normandie, France

Examiner	<b>Ralf Klasing</b> , Director of Research, CNRS, Université de Bordeaux, France
Reviewer	<b>Tero Laihonen</b> , Professor, University of Turku, Finlande
Reviewer	<b>Arnaud Pêcher</b> , Professor, Université de Bordeaux, France
Sep. 2009 - Mar. 2012	<b>Master in mathematics</b> ( <u>ALGANT Erasmus Mundus</u> ) Université de Bordeaux, France (1st year) – Università degli Studi di Padova, Italy (2nd year)
Master thesis defended March 2012	<b>Mordell-Weil theorems &amp; the Birch and Swinnerton-Dyer conjecture</b> , <i>Università degli Studi di Padova</i> , Italy
Supervisor	<b>Matteo Longo</b> , <i>Università degli Studi di Padova</i> , Italy
Aug. 2004 - June 2007	<b>Bachelor of Science</b> (Honours in mathematics) St. Xavier's College, Kolkata, University of Calcutta, Kolkata, India
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<b>Publications and submissions in journals</b>	
Published Feb. 2026	<b>Identifying codes in graphs of given maximum degree : Characterizing trees</b> , Dipayan Chakraborty, Florent Foucaud, Michael Henning and Tuomo Lehtilä, <i>Discrete Mathematics</i> 349(2) : 114826 (2026) <a href="https://doi.org/10.1016/j.disc.2025.114826">https://doi.org/10.1016/j.disc.2025.114826</a>
Published Jan. 2026	<b>On full-separating sets and related codes in graphs</b> , Dipayan Chakraborty and Annegret K. Wagler, <i>Discrete Applied Mathematics</i> 379 : 551-569 (2026) <a href="https://doi.org/10.1016/j.dam.2025.10.001">https://doi.org/10.1016/j.dam.2025.10.001</a>
Published Nov. 2025	<b>On open-separating dominating sets in graphs</b> , Dipayan Chakraborty and Annegret K. Wagler, <i>Discrete Applied Mathematics</i> 375 : 215-238 (2025) <a href="https://doi.org/10.1016/j.dam.2025.05.045">https://doi.org/10.1016/j.dam.2025.05.045</a>
Published Jan. 2025	<b>A linear algorithm for radio k-coloring of powers of paths having small diameters</b> , Dipayan Chakraborty, Soumen Nandi, Sagnik Sen and Supraja DK, <i>Journal of Computer and System Sciences</i> 147 : 103577 (2025) <a href="https://doi.org/10.1016/j.jcss.2024.103577">https://doi.org/10.1016/j.jcss.2024.103577</a>
Published Dec. 2024	<b>Progress towards the two-thirds conjecture on locating-total-dominating sets</b> , Dipayan Chakraborty, Florent Foucaud, Anni Hakanen, Michael Henning and Annegret Wagler, <i>Discrete Mathematics</i> 347(12) : 114176 (2024) <a href="https://doi.org/10.1016/j.disc.2024.114176">https://doi.org/10.1016/j.disc.2024.114176</a>
Published Dec. 2024	<b>On locating and neighbor-locating colorings of sparse graphs</b> , Dipayan Chakraborty, Florent Foucaud, Soumen Nandi, Sagnik Sen and Supraja DK, <i>Discrete Applied Mathematics</i> 358 : 366-381 (2024) <a href="https://doi.org/10.1016/j.dam.2024.07.012">https://doi.org/10.1016/j.dam.2024.07.012</a>
Published July 2024	<b>On three domination-based identification problems in block graphs</b> , Dipayan Chakraborty, Florent Foucaud, Aline Parreau and Annegret Wagler, <i>Fundamenta Informaticae (special issue : Iro Honkala's 60th birthday)</i> , 191(3-4) : 197-229 (2024) <a href="https://doi.org/10.3233/FI-242179">https://doi.org/10.3233/FI-242179</a>
Published Jan. 2023	<b>On clique numbers of colored mixed graphs</b> , Dipayan Chakraborty, Sandip Das, Soumen Nandi, Debdeep Roy and Sagnik Sen, <i>Discrete Applied Mathematics</i> 324 : 29-40 (2023) <a href="https://doi.org/10.1016/j.dam.2022.08.013">https://doi.org/10.1016/j.dam.2022.08.013</a>
Submitted Mar. 2025	<b>On the Structural Parameterizations of Locating-Dominating Set and Test Cover</b> , Dipayan Chakraborty, Florent Foucaud, Diptapriyo Majumdar and Prafullkumar Tale, <i>Manuscript</i> (2025) (submitted to <i>Journal of Computer and System Sciences</i> )
Submitted Mar. 2025	<b>Partitioning the vertex set of a graph into a dominating set and a locating dominating set</b> , Dipayan Chakraborty, Florent Foucaud, Michael Henning and Tero Laihonen, <i>Manuscript</i> (2025) (submitted to <i>The Electronic Journal of Combinatorics</i> )

- Submitted Feb. 2025 **On lower bounds for cardinalities of several separating-dominating codes in graphs**, Dipayan Chakraborty and Annegret K. Wagler, *Manuscript* (2025)  
(submitted to *Discrete Applied Mathematics*)
- Submitted Sep. 2024 **Tight (double) exponential bounds for identification problems : Locating-Dominating Set and Test Cover**, Dipayan Chakraborty, Florent Foucaud, Diptapriyo Majumdar and Prafullkumar Tale, *Manuscript* (2024)  
(submitted to *SIAM Journal on Discrete Mathematics*)
- Submitted Aug. 2024 **Identifying open codes in trees and 4-cycle-free graphs of given maximum degree**, Dipayan Chakraborty, Florent Foucaud and Michael Henning, *Manuscript* (2024)  
(submitted to *Discrete Applied Mathematics*)
- Submitted June 2024 **The  $n/2$ -bound for locating-dominating sets in subcubic graphs**, Dipayan Chakraborty, Anni Hakanen and Tuomo Lehtilä, *Manuscript* (2024)  
(submitted to *Graphs and Combinatorics*)
- Submitted Apr. 2024 **Identifying codes in triangle-free graphs of bounded maximum degree**, Dipayan Chakraborty, Florent Foucaud, Michael Henning and Tuomo Lehtilä, *Manuscript* (2024)  
(submitted to *Journal of Graph Theory*)

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## Publications and submissions in conferences with proceedings

- Accepted **The interplay between domination and separation in graphs**, Dipayan Chakraborty and Annegret K. Wagler, *XIII Latin American Algorithms, Graphs, and Optimization Symposium (LAGOS 2025)*
- Published June 2025 **Structural parameterization of locating-dominating set and test cover**, Dipayan Chakraborty, Florent Foucaud, Diptapriyo Majumdar and Prafullkumar Tale, *14th International Conference on Algorithms and Complexity (CIAC), Lecture Notes in Computer Science 15679 : 187-204* (2025)  
[https://doi.org/10.1007/978-3-031-92932-8\\_13](https://doi.org/10.1007/978-3-031-92932-8_13)
- Published Feb. 2025 **On full-separating sets in graphs**, Dipayan Chakraborty and Annegret Wagler, *11th International Conference on Algorithms and Discrete Applied Mathematics (CALDAM), Lecture Notes in Computer Science 15536 :73-84* (2025)  
[https://doi.org/10.1007/978-3-031-83438-7\\_7](https://doi.org/10.1007/978-3-031-83438-7_7)
- Published Dec. 2024 **Tight (double) exponential bounds for identification problems : Locating-Dominating Set and Test Cover**, Dipayan Chakraborty, Florent Foucaud, Diptapriyo Majumdar and Prafullkumar Tale, *35th International Symposium on Algorithms and Computation (ISAAC), Leibniz International Proceedings in Informatics 322 : 19 :1-19 :18* (2024)  
<https://doi.org/10.4230/LIPIcs.ISAAC.2024.19>
- Published May 2024 **Open-separating dominating codes in graphs**, Dipayan Chakraborty and Annegret K. Wagler, *8th International Symposium on Combinatorial Optimization (ISCO), Lecture Notes in Computer Science 14594 : 137-151* (2024)  
[https://doi.org/10.1007/978-3-031-60924-4\\_11](https://doi.org/10.1007/978-3-031-60924-4_11)
- Published Jan. 2024 **Location-Domination Type Problems Under the Mycielski Construction**, Silvia M. Bianchi, Dipayan Chakraborty, Yanina Lucarini and Annegret K. Wagler, *10th International Conference on Algorithms and Discrete Applied Mathematics (CALDAM), Lecture Notes in Computer Science 14508 : 255-269* (2024)  
[https://doi.org/10.1007/978-3-031-52213-0\\_18](https://doi.org/10.1007/978-3-031-52213-0_18)
- Published Sep. 2023 **Contracting edges to destroy a pattern : A complexity study**, Dipayan Chakraborty and Sandeep RB, *24th International Symposium on Fundamentals of Computation Theory (FCT), Lecture Notes in Computer Science 14292 : 118-131* (2023)  
[https://doi.org/10.1007/978-3-031-43587-4\\_9](https://doi.org/10.1007/978-3-031-43587-4_9)
- Published Sep. 2023 **Identifying codes in bipartite graphs of given maximum degree**, Dipayan Chakraborty, Florent Foucaud, Tuomo Lehtilä, *XII Latin-American Algorithms, Graphs and Optimization Symposium (LAGOS), Procedia Computer Science 223 : 157-165* (2023)  
<https://doi.org/10.1016/j.procs.2023.08.225>

Published June 2023 **A linear algorithm for radio  $k$ -coloring powers of paths having small diameter**, Dipayan Chakraborty, Soumen Nandi, Sagnik Sen and DK Supraja, *34th International Workshop on Combinatorial Algorithms (IWOCA), Lecture Notes in Computer Science 13889 : 148-159 (2023)*  
[https://doi.org/10.1007/978-3-031-34347-6\\_13](https://doi.org/10.1007/978-3-031-34347-6_13)

Published Jan. 2023 **On three domination-based identification problems in block graphs**, Dipayan Chakraborty, Florent Foucaud, Aline Parreau and Annegret Wagler, *9th International Conference on Algorithms and Discrete Applied Mathematics (CALDAM), Lecture Notes in Computer Science 13947 : 271-283 (2023)*  
[https://doi.org/10.1007/978-3-031-25211-2\\_21](https://doi.org/10.1007/978-3-031-25211-2_21)

Published Jan. 2023 **New bounds and constructions for neighbor-locating colorings of graphs**, Dipayan Chakraborty, Florent Foucaud, Soumen Nandi, Sagnik Sen and Supraja DK, *9th International Conference on Algorithms and Discrete Applied Mathematics (CALDAM), Lecture Notes in Computer Science 13947 : 121-133 (2023)*  
[https://doi.org/10.1007/978-3-031-25211-2\\_9](https://doi.org/10.1007/978-3-031-25211-2_9)

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## Conferences / Summer Schools

November 2024 **Journées Graphes et Algorithmes**, (JGA 2024)  
Organised by : Université de Bourgogne, France

May 2024 **École de Printemps en Informatique Théorique**, (EPIT 2024)  
Organised by : École Normale Supérieure de Lyon, France

February 2024 **10th International Conference on Algorithms and Discrete Applied Mathematics**, (CALDAM 2024)  
Organised by : IIT Bhilai, Chhattisgarh, Inde

September 2023 **XII Latin-American Algorithms, Graphs and Optimization Symposium**, (LAGOS 2023)  
Organised by : Instituto de Matemáticas, UNAM, Juriquilla, Mexique

June 2023 **CIMPA Research School on Graph Structure and Complex Network Analysis**, (CIMPA GSCN 2023)  
Organised by : Nesin Mathematics Village, Sirince, Izmir, Turquie

February 2023 **9th International Conference on Algorithms and Discrete Applied Mathematics**, (CALDAM 2023)  
Organised by : DAIICT, Gandhinagar, Inde

September 2022 **Maribor Graph Theory Conference**, (MGTC 2022)  
Organised by : Faculty of Natural Sciences and Mathematics, University of Maribor, Slovenia

July 2022 **11th International Colloquium on Graph Theory and Combinatorics**, (ICGT 2022)  
Organised by : LIRMM, Montpellier, France

June 2022 **School on Graph Theory, Murol, France**, (SGT 2022)  
Organised by : LIMOS, Université Clermont Auvergne, France

May 2021 **Annual Meeting of Homomorphisms of Signed Graphs**, (HOSIGRA 2021)  
Organised by : Université de Bordeaux, Université de Montpellier et Université de Paris Diderot, France

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## Reviews for journals and conferences

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**  
**International Workshop on Graph-Theoretic Concepts in Computer Science, WG**  
**International Computing and Combinatorics Conference, COCOON**

Journal **Fundamenta Informaticae**  
**The Australasian Journal of Combinatorics**

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## Research supervision

- May 2025 - Dec. 2025 **Intern of 3rd year bachelor's degree, PSG College of Technology, Coimbatore, India,**  
*Subject of research : Identification problems in graphs*  
Co-supervised with Prof. Florent Foucaud, Université Clermont Auvergne, France
- May 2024 - July 2024 **Intern of 3rd year bachelor's degree, Chennai Mathematical Institute, Chennai, India,**  
*Subject of research : Local identification problems in graphs*  
Co-supervised with Prof. Florent Foucaud, Université Clermont Auvergne, France

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## Organisation of scientific events

- Organising committee **41st International Symposium on Theoretical Aspects of Computer Science, Clermont-Ferrand, France, (STACS 2024)**  
Organised by : Université Clermont-Auvergne, France

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## Teaching activities

- 2025 - till date **Centrale Méditerranée, Château-Gombert, Marseille, France**

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### Courses taught

- **JAVA (common core)** (TD+TP || 2025-2026 || 28 hours)  
1st year of Undergraduate Engineering
- **Algorithms (common core)** (TD+TP || 2025-2026 || 32 hours)  
1st year of Undergraduate Engineering
- **Databases and Structures (common core)** (TD+TP || 2025-2026 || 20 hours)  
1st year of Undergraduate Engineering
- **Python Scientific** (TD+TP || 2025-2026 || 18 hours)  
2nd year of Undergraduate Engineering

- 2025 - till date **Aix-Marseille Université - Centrale Méditerranée, Saint-Jérôme, Marseille, France**

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### Courses taught

- **Graph Theory and Algorithms** (TD+TP || 2025-2026 || 34 hours)  
2nd year of Bachelors MPCI

- 2022 - 2025 **IUT Clermont Auvergne, Université Clermont Auvergne, Aubière, France**

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### Courses taught

- **Méthodes d'Optimisation** (TD+TP || 2022-2024 || 42 heures)  
University Bachelor of Technology (BUT) Computer Science – 2nd year

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

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### Courses taught

- **Graph theory and algorithms** (Course+Tutorial || 2016-2020 || 84 hours)  
Bachelor of Technology. (B. Tech)
- **Linear algebra** (Course+Tutorial || 2016-2020 || 120 hours)  
Bachelor of Technology. (B. Tech)
- **Abstract algebra** (Course+Tutorial || 2016-2020 || 75 hours)  
Bachelor of Technology. (B. Tech)

- **Probability** (Course+Tutorial || 2016-2020 || 132 hours)  
Bachelor of Technology. (B. Tech)
- **Real analysis** (Course+Tutorial || 2016-2019 || 66 hours)  
Bachelor of Technology. (B. Tech)
- **Complex analysis** (Course+Tutorial || 2016-2020 || 127 hours)  
Bachelor of Technology. (B. Tech)
- **Numerical methods** (Course+Tutorial+Practicals || 2016-2020 || 143 hours)  
Bachelor of Technology. (B. Tech)
- **Differential calculus** (Course+Tutorial || 2016-2020 || 134 hours)  
Bachelor of Technology. (B. Tech)
- **Integral transforms** (Course+Tutorial || 2016-2019 || 64 hours)  
Bachelor of Technology. (B. Tech)

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

#### Courses taught

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- **Probability** (Course+Tutorial || 2016-2020 || 23 hours)  
Bachelor of Technology. (B. Tech)
- **Integral transforms** (Course+Tutorial || 2015-2016 || 17 hours)  
Bachelor of Technology. (B. Tech)
- **Fourier analysis** (Course+Tutorial || 2015-2016 || 17 hours)  
Bachelor of Technology. (B. Tech)
- **Differential equations** (Course+Tutorial || 2015-2016 || 20 hours)  
Bachelor of Technology. (B. Tech)

## Academic References

- **Florent Foucaud**, LIMOS, Université Clermont Auvergne, France  
[florent.foucaud@uca.fr](mailto:florent.foucaud@uca.fr)
- **Annegret Wagler**, LIMOS, Université Clermont Auvergne, France  
[annegret.wagler@limos.fr](mailto:annegret.wagler@limos.fr)
- **Michael Henning**, Department of Mathematics and Applied Mathematics, University of Johannesburg, Afrique de Sud  
[mahenning@uj.ac.za](mailto:mahenning@uj.ac.za)
- **Sagnik Sen**, Department of Mathematics, Indian Institute of Technology Dharwad, Karnataka, Inde  
[sagnik@iitdh.ac.in](mailto:sagnik@iitdh.ac.in)