

Dipayan CHAKRABORTY

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

last updated : 4 septembre 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 **Research 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, Baruiপুর, 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 **Ralf Klasing**, *Director of Research, CNRS, Université de Bordeaux, France*

Reviewer **Tero Laihonon**, *Professor, University of Turku, Finlande*

Reviewer **Arnaud Pêcher**, *Professor, Université de Bordeaux, France*

Sep. 2009 - Mar. 2012 **Master in mathematics** (ALGANT Erasmus Mundus)
Université de Bordeaux, France (1st year) – Università degli Studi di Padova, Italy (2nd year)
Master thesis defended March 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*

Aug. 2004 - June 2007 **Bachelor of Science** (Honours in mathematics)
St. Xavier's College, Kolkata, University of Calcutta, Kolkata, India

Publications and submissions in journals

- Published Nov. 2025 **On open-separating dominating sets in graphs**, Dipayan Chakraborty and Annegret K. Wagler, *Discrete Applied Mathematics* 375 : 215-238 (2025)
<https://doi.org/10.1016/j.dam.2025.05.045>
- Published Jan. 2025 **A linear algorithm for radio k-coloring of powers of paths having small diameters**, Dipayan Chakraborty, Soumen Nandi, Sagnik Sen and Supraja DK, *Journal of Computer and System Sciences* 147 : 103577 (2025)
<https://doi.org/10.1016/j.jcss.2024.103577>
- Published Dec. 2024 **Progress towards the two-thirds conjecture on locating-total-dominating sets**, Dipayan Chakraborty, Florent Foucaud, Anni Hakanen, Michael Henning and Annegret Wagler, *Discrete Mathematics* 347(12) : 114176 (2024)
<https://doi.org/10.1016/j.disc.2024.114176>
- Published Dec. 2024 **On locating and neighbor-locating colorings of sparse graphs**, Dipayan Chakraborty, Florent Foucaud, Soumen Nandi, Sagnik Sen and Supraja DK, *Discrete Applied Mathematics* 358 : 366-381 (2024)
<https://doi.org/10.1016/j.dam.2024.07.012>
- Published July 2024 **On three domination-based identification problems in block graphs**, Dipayan Chakraborty, Florent Foucaud, Aline Parreau and Annegret Wagler, *Fundamenta Informaticae (special issue : Iro Honkala's 60th birthday)*, 191(3-4) : 197-229 (2024)
<https://doi.org/10.3233/FI-242179>
- Published Jan. 2023 **On clique numbers of colored mixed graphs**, Dipayan Chakraborty, 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 Mar. 2025 **On the Structural Parameterizations of Locating-Dominating Set and Test Cover**, Dipayan Chakraborty, Florent Foucaud, Diptapriyo Majumdar and Prafullkumar Tale, *Manuscript* (2025) (submitted to *Journal of Computer and System Sciences*)
- Submitted Mar. 2025 **Partitioning the vertex set of a graph into a dominating set and a locating dominating set**, Dipayan Chakraborty, Florent Foucaud, Michael Henning and Tero Laihonon, *Manuscript* (2025) (submitted to *Information Processing Letters*)
- Submitted Mar. 2025 **On full-separating sets and related codes in graphs**, Dipayan Chakraborty and Annegret K. Wagler, *Manuscript* (2025) (submitted to *Discrete Applied Mathematics*)
- 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 July 2024 **Identifying codes in graphs of given maximum degree : Characterizing trees**, Dipayan Chakraborty, Florent Foucaud, Michael Henning and Tuomo Lehtilä, *Manuscript* (2024)
(submitted to *Journal of Graph Theory*)
- 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 *Discrete Mathematics*)

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
- 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
- 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
- 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
- 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
- Published Sep. 2023 **Identifying codes in bipartite graphs of given maximum degree**, with 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
- 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
- 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

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, Sirinçe, 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, Slovenie
- 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

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*

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

Organisation of scientific events

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

Teaching activities

- 2022-2025 || Univ. **IUT Clermont Auvergne, Université Clermont Auvergne, Aubière, France**
- Courses taught
-
- **Methodes d'Optimisation** (TD+TP || 2022-2024 || 42 heures)
University Bachelor of Technology (BUT) Computer Science – 2nd année
- 2016-2020 || Univ. **Gargi Memorial Institute of Technology (GMIT), Maulana Abul Kalam Azad University of Technology (MAKAUT), Kolkata, India**
- 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 || Univ. **Government College of Engineering & Ceramic Technology (GCECT), Maulana Abul Kalam Azad University of Technology (MAKAUT), Kolkata, Inde**

Courses taught

- **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
- **Annegret Wagler**, *LIMOS, Université Clermont Auvergne, France*
annegret.wagler@limos.fr
- **Michael Henning**, *Department of Mathematics and Applied Mathematics, University of Johannesburg, Afrique de Sud*
mahenning@uj.ac.za
- **Sagnik Sen**, *Department of Mathematics, Indian Institute of Technology Dharwad, Karnataka, Inde*
sagnik@iitdh.ac.in