

# MOHAMAD NABIL NASSER



- **Born on:** 17/08/1990.
- **Nationality:** Lebanese.
- **Address:** Lebanon – Aramoun.
- **University:** Beirut Arab University.
- **Faculty:** Science.
- **Department:** Mathematics and Computer Science.
- **Current Position:** Assistant Professor.
- **Email:** [m.nasser@bau.edu.lb](mailto:m.nasser@bau.edu.lb), [m-nasser1@outlook.com](mailto:m-nasser1@outlook.com)
- **Telephone number:** 00961-76741358.

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## Education

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1. **2016-2022:** Ph.D. in Pure Mathematics (Algebra) from Beirut Arab University, under the supervision of the Department of Mathematics and Computer Science chairperson, Mohammad N. Abdul Rahim. "Representation Theory" was the topic of our investigation. We examined the irreducibility, faithfulness, and unitarity of various group representations. In this journey, we have four publications (listed below). Upon request, the thesis and thesis summary are provided.
2. **2014:** Master 2 in Discrete Mathematics and Algebra from Lebanese University, under the supervision of Professor Amine El-Sahili. We studied Claws in digraphs within the field of "Graph Theory". Our task was to extend Sak and Sos' theorem, which states that any claw of order  $k$  can be found in any  $2k - 2$  chromatic digraph. We expanded its meaning to encompass any in-branching tree of order  $k$ .
3. **2013:** Master 1 in Pure Mathematics from Lebanese University.
4. **2009-2012:** Bachelor of Science in Mathematics from Lebanese University.

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## Work Experience

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1. **Teaching:**
  - a. Taught Mathematics in various high schools (2016 - 2020).
  - b. Taught Mathematics for the SAT program (2016 – 2023).

- c. Assistant professor of Mathematics, Faculty of Science, Beirut Arab University (2025– Present).
- Undergraduate courses:
    - ✓ BMTH 201: Business Math (*Business Administration*).
    - ✓ BMTH 202: Business Statistics (*Business Administration*).
    - ✓ MATH 110: Introduction to Calculus and Analytic Geometry I.
    - ✓ MATH 111: Introduction to Calculus and Analytic Geometry II.
    - ✓ MATH 112: Introduction to Algebra.
    - ✓ MATH 113: Fundamentals of Statistics.
    - ✓ MATH 241: Calculus and Analytic Geometry.
    - ✓ MATH 242: Probability and Statistics.
    - ✓ MATH 244: Ordinary Differential Equations.
    - ✓ MATH 246: Real Analysis I.
    - ✓ MATH 281: Linear Algebra (*Engineering*).
    - ✓ MATH 282: Calculus (*Engineering*).
    - ✓ MATH 283: Differential Equations (*Engineering*).
    - ✓ MATH 343: Special Functions.
    - ✓ MATH 346: Abstract Algebra I.
    - ✓ MATH 348: Numerical Methods.
    - ✓ MATH 353: Set Theory.
    - ✓ MATH 441: Introduction to Complex Analysis.
  - Graduate courses:
    - ✓ INSS 602: Applied Statistics (*Business Administration*).

- ✓ STAT 603: Probability and Statistics.
- ✓ STAT 605: Statistical Computing.
- ✓ STAT 606: Statistical Programming.

**2. Education Management:**

- a. Director and owner of a tutoring center (“A” Grade Center) (2017 - 2018).

**3. Training and Facilitating:**

- a. Designed and facilitated various courses related to personality and career building, for example, Time management, Smart reading & Note-taking, and Problem-solving (2016 - present).
- b. Certified trainer in the “Arabian Global Academy for Training and Development” (2016).
- c. Certified trainer in “Skills Development Institute” (2016 – 2023).

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## Skills

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**1. Languages:**

- a. Arabic: mother language.
- b. English: very good.

**2. Computer and Internet Skills:**

- a. Microsoft Office: Outlook, Word, PowerPoint, Excel.
- b. OneDrive.
- c. Microsoft Teams.
- d. Google Drive.
- e. Google Meet.

- f. Zoom.
- g. LaTeX.
- h. Mathematica.
- i. Maple.
- j. SPSS.
- k. Python.
- l. R Language.

3. **Personal Skills:**

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|----------------------|-------------------------|--------------------|
| a. Teaching          | b. Training             | c. Facilitating    |
| d. Researching       | e. Teamwork             | f. Public speaking |
| g. Class management  | h. Education management | i. Time management |
| j. Preparing lessons | k. Communication skills | l. Problem-solving |

## Research & Publications

My research currently focuses on “Representation Theory.” I work especially with representations of Braid Groups, Pure Braid Groups, and their extensions. The following is the list of publications starting in 2020. The first four publications were done during the Ph.D. journey.

1. M. N. Nasser and M. N. Abdulrahim, “On the composition of the Perron-Vannier representation and the natural map  $P_n \rightarrow P_{2n}$ ”, *International Journal of Applied Mathematics*, 33 (1), 125-136, (2020). DOI: [10.12732/ijam.v33i1.10](https://doi.org/10.12732/ijam.v33i1.10).

2. M. N. Nasser and M. N. Abdulrahim, "On the irreducibility of the extensions of Burau and Gassner representations", *ANNALI DELL'UNIVERSITÀ DI FERRARA*, 67, 415-434, (2021). DOI: [10.1007/s11565-021-00376-4](https://doi.org/10.1007/s11565-021-00376-4).
3. M. N. Nasser and M. N. Abdulrahim, "On the faithfulness of the extension of Lawrence-Krammer representation of the group of conjugating automorphisms  $C_3$ ", *The Journal of Indian Mathematical Society*, 90 (3-4), 309-318, (2023). DOI: [10.18311/jims/2023/29869](https://doi.org/10.18311/jims/2023/29869).
4. M. N. Nasser and M. N. Abdulrahim, "The irreducibility of the complex specialization of Lawrence-Krammer representation of  $P_4$  on the band generators", *The Indian Journal of Mathematics*, 65 (1), 117-133. (2023).
5. M. N. Nasser, R. G. Abou Nasser Al Yafi, and M. N. Abdulrahim, "Irreducible representations of the group of conjugating automorphisms of a free group", *International Journal of Applied Mathematics*, 37 (5), 532-537, (2024). DOI: [10.12732/ijam.v37i5.4](https://doi.org/10.12732/ijam.v37i5.4)
6. M. N. Nasser, "Necessary and sufficient conditions for the irreducibility of a linear representation of the braid group  $B_n$ ", *Arabian Journal of Mathematics*, 13, 333-339, (2024). DOI: [10.1007/s40065-024-00468-x](https://doi.org/10.1007/s40065-024-00468-x).
7. M. N. Nasser, "The faithfulness of an extension of Lawrence-Krammer-Beigelow representation of the group of conjugating automorphisms  $C_n$  in the cases  $n = 3$  and  $n = 4$ ", *BAU Journal of Science and Technology*, 6 (1), Article 1, (2024). DOI: [10.54729/2959-331X.1151](https://doi.org/10.54729/2959-331X.1151).
8. M. N. Nasser, "Local extensions and  $\Phi$ -type extensions of some Local representations of the braid group  $B_n$  to the singular braid monoid

$SM_n$ ", *Vietnam Journal of Mathematics*, (2025). DOI: [10.1007/s10013-025-00741-2](https://doi.org/10.1007/s10013-025-00741-2).

9. M. N. Nasser, "A note on the faithfulness of the evaluated Gassner representation of the pure braid group", *International Journal of Applied Mathematics*, 38 (3), 403-410, (2025). DOI: [10.12732/ijam.v38i3.7](https://doi.org/10.12732/ijam.v38i3.7).
10. M. N. Nasser, "On the faithfulness of a family of representations of the singular braid monoid  $SM_n$ ", *Beiträge zur Algebra und Geometrie/Contributions to Algebra and Geometry*, (2025). DOI: [10.1007/s13366-025-00798-7](https://doi.org/10.1007/s13366-025-00798-7).
11. T. I. Mayassi and M. N. Nasser, "Classification of homogeneous local representations of the singular braid monoid", *Arabian Journal of Mathematics*, (2025). DOI: [10.1007/s40065-025-00580-6](https://doi.org/10.1007/s40065-025-00580-6).
12. M. N. Nasser, "A note on extending the Wada representations of the braid group to the singular braid monoid", submitted.
13. M. N. Nasser, T. I. Mayassi, and N. Chbili, "Attacks on Fox's trapezoidal conjecture", submitted.
14. M. N. Nasser, "Local representations of the virtual and the welded braid groups", submitted.
15. M. N. Nasser, M. Y. Chreif, and M. M. Dally, "Local representations of the flat virtual braid group", submitted.
16. M. N. Nasser, "On extensions of the standard representation of the braid group to the singular braid group", submitted.
17. M. N. Nasser, "On circular braid group representations", submitted.

18. M. N. Nasser, V. Keshari, and M. Prabhakar, "Matrix representations of the twisted virtual braid group and its extensions", submitted.
19. M. N. Nasser, "On the irreducibility of singular braid group representations", submitted.
20. M. N. Nasser, "Twin groups representations", submitted.
21. V. Keshari, M. N. Nasser, and M. Prabhakar, "On representations of the multi-virtual braid group  $M_kVB_n$  and the multi-welded braid group  $M_kWB_n$ ", submitted.
22. J. N. Zeineddine, M. N. Nasser, and M. N. Abdulrahim, "Discreteness of specializations of Wada representations and Gassner representation", submitted.
23. T. I. Mayassi and M. N. Nasser, "On the classification and irreducibility of 2-local representations of the twin group  $T_n$ ", submitted.
24. M. N. Nasser, "Insights on the homogeneous 3-local representations of the twin groups", submitted.
25. M. Y. Chreif, M. M. Dally, and M. N. Nasser, "Insights on representations of the virtual singular braid monoid", submitted.
26. M. N. Nasser and N. Chbili, "Algebraic and topological aspects of the singular twin group and its representations", submitted.
27. M. N. Nasser and C. Caprau, "The virtual singular twin monoid and group presentations and representations", submitted.
28. M. N. Nasser and T. I. Mayassi, "Towards a study of low-dimensional matrix representations of the cactus group", submitted.

29. M. N. Nasser, "Representations of the pure braid groups  $P_n$  derived from local representations of the braid groups  $B_n$ ", submitted.

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## Reviewing<sup>1</sup>

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1. Reviewer in the American Mathematical Society.
2. Reviewer in "*Mathematics and Statistics* - ISSN: 2332-2071". Publisher: Horizon Research Publishing.
3. Reviewer in "*Journal of Statistics Applications and Probability* - ISSN: 2090-8423". Publisher: Natural Sciences Publishing.

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## Graduate Student Advising

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1. Jihan Zeineddine (Ph.D.): "On the Generalizations of Artin Braid group and Temperley-Lieb Algebra" (With Prof. M. N. Abdulrahim).

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## Committees

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1. Member of the Scientific Committee of the Lebanese Society for the Mathematical Sciences (LSMS) (2025 - Present).
2. Member of the Faculty of Science Council at Beirut Arab University (BAU) (2024-2025).
3. Head of the Student Activities Committee in the Faculty of Science at Beirut Arab University (BAU) (2025 - Present).

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## Links & Resources

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<sup>1</sup> Certificates of review and official appointment documents can be provided upon request.

1. [LinkedIn.](#)
2. [Google Scholar.](#)
3. [Orcid.](#)
4. [Research Gate.](#)

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## Activities & Conferences

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1. **2016:** Participated in a workshop on Mathematical Analysis at *Beirut Arab University*.
2. **2017:** Successfully completed a Training of Trainers (TOT) program with *the Arabian Global Academy for Training and Development*.
3. **2019:** Attended the *Ninth Annual Meeting of the Lebanese Society for the Mathematical Sciences (LSMS)*, held at the Doctoral School of Science and Technology, *Lebanese University – Fanar Campus*.
4. **2023:** Participated in the *Doctoral Studies National Research Days at the Holy Spirit University of Kaslik*.
5. **2024:** Attended a seminar entitled “Representation of Some Infinite Groups Using Diagrams” at *Beirut Arab University*.
6. **2024:** Attended the *Eleventh Annual Meeting of the Lebanese Society for the Mathematical Sciences (LSMS)* at *Notre Dame University – Louaize*.
7. **2025:** Delivered an invited talk at the *Twelfth Annual Meeting of the Lebanese Society for the Mathematical Sciences (LSMS)*, held at the *American University of Beirut*, entitled “Local extensions and  $\Phi$ -type

extensions of some local representations of the braid group  $B_n$  to the singular braid monoid  $SM_n$ ."

8. **2025:** Delivered an online talk at the *ISIM & ISWIM Conference*, hosted by the *National University of Science and Technology POLITEHNICA Bucharest*, entitled "Representations of the Braid Group and Their Extensions to the Singular Braid Monoid."
9. **2025:** Delivered an online invited talk at the *Knots and Related Topics Conference*, held at the *Indian Institute of Technology Ropar*, entitled "A Note on Extending the Wada Representations of the Braid Group to the Singular Braid Monoid."

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## Teaching Statement

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Since every student is different, they should all have a welcoming and supportive learning environment where they can develop intellectually, emotionally, physically, and socially.

"Individualization" refers to the educational concept of attending to each student individually. My goal is to establish an environment where students can reach their potential. In addition, I try to create a secure space where students feel comfortable sharing their thoughts.

Furthermore, against trendy belief, teaching mathematics involves more than merely imparting rules and theories; it involves deeper thinking. If a math instructor could "discuss" math with his students rather than simply impart the material, I believe he may succeed in his teaching style.

However, the teacher is now just one of several tools available to the students. These days, any student has easy access to any information. This means the instructor should facilitate knowledge transfer and create a supportive learning environment for each student.

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## Research Statement

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Without research, the world would not be better; research is the foundation for all inventions. Only some people are cut out to be researchers. Patience, persistence, and passion are required for research.

I make it a point to work on open problems as I go through my research process. Under the guidance of my Ph.D. advisor, Professor Mohammad N. Abdul Rahim at Beirut Arab University, I completed four papers.

After getting my Ph.D., I kept doing research and would dedicate most of my days to it.

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## Hobbies & Interests

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| 1. Reading     | 2. Chess.    | 3. Football.     |
| 4. Meditation. | 5. Swimming. | 6. Table Tennis. |

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## Recommendation Letters

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1. **2012:** Dr. Sami Hamieh, assistant professor in pure mathematics at Lebanese University.

2. **2012:** Dr. Nidal Ali, associate professor in pure mathematics at Lebanese University.
3. **2012:** Dr. Mohammad Hamieh, associate professor in pure mathematics at Lebanese University.
4. **2013:** Dr. Hassan Abbas, associate professor in applied mathematics at Lebanese University.
5. **2014:** Prof. Amine El-Sahili, full professor in pure mathematics at Lebanese University.
6. **2018:** Prof. Mohammad Abdul Rahim, full professor in pure mathematics and chairperson of the Department of Mathematics and Computer Science at Beirut Arab University.

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## Collaborators

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1. Prof. Mohammad Abdul Rahim – Beirut Arab University – Lebanon.  
Email: [mna@bau.edu.lb](mailto:mna@bau.edu.lb)
2. Prof. Carmen Caprau - California State University, Fresno - USA.  
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3. Prof. Nafaa Chbili – United Arab Emirates University – UAE.  
Email: [nafaachbili@uaeu.ac.ae](mailto:nafaachbili@uaeu.ac.ae)
4. Dr. Madeti Prabhakar – Indian Institute of Technology Ropar – India.  
Email: [prabhakar@iitrpr.ac.in](mailto:prabhakar@iitrpr.ac.in)
5. Dr. Khaled Qazaqzeh – Yarmouk University – Jordan.  
Email: [qazaqzeh@yu.edu.jo](mailto:qazaqzeh@yu.edu.jo)
6. Dr. Taher Mayassi – Lebanese International University – Lebanon.

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## References

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1. Prof. Mohammad Abdul Rahim, email: [mna@bau.edu.lb](mailto:mna@bau.edu.lb)
2. Prof. Toufic El Arwadi, email: [t.elarwadi@bau.edu.lb](mailto:t.elarwadi@bau.edu.lb)