

Nurdan Kar, Ph.D.

PERSONAL

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EDUCATION

Doctor of Philosophy (Ph.D.) in Mathematics **Ankara, Türkiye**
Ankara University 2019 – 2025
Master of Science (M.Sc.) in Mathematics **Ankara, Türkiye**
Hacettepe University 2016 – 2018
Special Student (during M.Sc. at Hacettepe University) **Ankara, Türkiye**
Middle East Technical University (METU) Spring 2017

RESEARCH EXPERIENCES

Research Scholar **MD, USA**
University of Maryland, College Park Jan 2023 – Jan 2024
PhD Thesis Research
Developed Python code to solve a fractional partial differential equation to model glioblastoma growth. Attended the BIOL 708T (Theoretical Ecology) course.

RESEARCH INTERESTS

- Applied Mathematics
- Mathematical Biology (Disease Modeling)
- Stochastic Modeling of Biological Systems

FUNDING AND FELLOWSHIPS

- Centre International de Mathématiques Pures et Appliquées (CIMPA) Grant 2025
(€1000 travel grant + accommodation expenses)
- TÜBİTAK 2214-A International Research Fellowship for Ph.D. Students 2022
(\$21600 + travel expenses)

FUNDING FOR EVENTS

- Turkish Mathematical Society - MAD Fund for Mathematical Modeling Symposium 2025
(25000TL/\$650)

SOCIETY MEMBERSHIPS

- Society for Industrial and Applied Mathematics (SIAM) 2025 – present
- Association for Women in Mathematics (AWM) 2025 – present
- Society for Mathematical Biology (SMB) 2020 – present

PAPERS

- **Kar, N.** (2026). Fractional PDE modeling of glioblastoma spread on BrainWeb MRI images. In preparation.
- **Kar, N.** (2025). A comparative study of hypofractionated and standard fractionated radiotherapy in glioblastoma with two different growth patterns. In preparation.
- **Kar, N., Özalp, N.** (2024). A fractional mathematical model approach on glioblastoma growth: tumor visibility timing and patient survival. *Mathematical Modelling and Numerical Simulation with Applications*, 4(1), 66-85. <https://doi.org/10.53391/mmnsa.1438916>
- *Research Highlight: Introduced a novel mathematical model for glioblastoma growth.*
- **Kar, N.** (2023). Time-fractional quenching problem: Blow-up of $D_t^\alpha u$ at the quenching point. arXiv: 2306.07508 [math.AP].
- *Research Highlight: Proved the occurrence of blow-up in the time-fractional term at the quenching point.*

INVITED TALKS

II Encuentro Multidisciplinario de Ciencias Naturales y Exactas: Rosalind Franklin **Online**
Cayetano Heredia University (Peru) 13 Nov 2025
Talk: Evolution of Mathematical Models of Tumor Growth

TALKS

Centre International de Mathématiques Pures et Appliquées Research School **Havana, Cuba**
University of Havana 10 Jun 2025
Talk: Reaction-Diffusion Formalism for Glioma Growth

Departmental Seminar **Ankara, Türkiye**
İ.D Bilkent University 7 Apr 2025
Talk: A Mathematical Model for Tracking Malignancy in the Human Brain

İzmir Mathematics Days VI **İzmir, Türkiye**
Yasar University 12 Sep 2024
Talk: DTI-Based Mathematical Modeling of Glioma Invasion

Departmental Seminar **Online**
İ.D Bilkent University (Türkiye) 3 Sep 2024
Talk: Mathematical Modeling of Glioblastoma Growth

Lightning Talks **Online**
DRP Türkiye 2024 30 Jul 2024
Talk: On Mathematical Oncology

15th Ankara Mathematics Days **Ankara, Türkiye**
Ankara Hacı Bayram Veli University 23 May 2024
Talk: A Macroscopic-Scale Fractional Model for Glioblastoma Recurrence Monitoring

9th Workshop of Association for Turkish Women in Maths **İzmir, Türkiye**
İzmir University of Economics 03 May 2024
Talk: A Fractional Mathematical Model for Macroscopic Dynamics of Glioblastoma Growth

Graduate Seminars III **Ankara, Türkiye**
Hacettepe University 23 Feb 2024
Talk: Examining Glioblastoma Dynamics Through a Fractional Mathematical Modeling Perspective

Departmental Seminar (Host: Prof. Sridhar Hannenhalli) **MD, USA**
National Cancer Institute 03 Oct 2023

Talk: Tracking Glioblastoma Recurrence: A Novel Prognostic Mathematical Model Approach

Monroe Martin Talks

University of Maryland

MD, USA

31 Mar 2023

Talk: Time-Fractional Order Modeling of Brain Tumor Dynamics

İzmir Mathematics Days I

Yasar University

İzmir, Türkiye

27 Jun 2018

Talk: Bäcklund Transformations of Nonlinear Partial Differential Equations

CONFERENCE ATTENDANCE (Selected)

SMB 2020 Annual Meeting

The Society of Mathematical Biology

Online

17 – 20 Aug 2020

Attendee

The 8th International Workshop on Differential Equations and Applications

Dokuz Eylül University

İzmir, Türkiye

02 – 04 Jun 2017

Attendee

TEACHING AND MENTORING

Instructor

Department of Mathematics, Bilkent University

Ankara, Türkiye

2024–present

• Courses Taught:

- MATH 260 – Introduction to Statistics (Spring 2026; 3 sections)
- MATH 230 – Probability and Statistics for Engineers (Fall 2025; 3 sections, Summer 2026; 1 Section)
- MATH 106 – Introduction to Calculus II (Spring 2025; 2 sections, Summer 2025; 1 section)
- MATH 105 – Introduction to Calculus I (Fall 2024; 2 sections)

• Course Coordinator (MATH 260 Spring 2026; MATH 230 Summer 2026)

Mentor

Directed Reading Program (DRP) Türkiye

Hybrid

Summers 2024–2025

- Mentored undergraduate students through structured reading and discussion on advanced topics, such as:
 - Mathematical formulations of Waddington’s epigenetic landscape (**Bartu Gencer**, Boğaziçi University).
 - Diffusion Tensor Imaging (DTI)-based approaches to modeling anisotropic cancer invasion pathways (**Beyza Nur Korkmaz**, Bursa Technical University).
- Supported students in understanding advanced literature and developing mathematical intuition.
- Assisted students in preparing and delivering presentations at a concluding in-person symposium, and accompanied them during their talks.

ACADEMIC EXPERIENCES

Participant & Speaker (Grant Awardee)

CIMPA & University of Havana

Havana, Cuba

9 – 20 Jun 2025

Research School

Attended lectures on mathematical models in biology and delivered a talk.

Participant

Fields Institute (Canada)

Online

Sep 2024 – Dec 2024

Thematic Program in Mathematical Oncology

Attended graduate courses in mathematical oncology.

Participant

Association for Turkish Women in Maths & METU

Ankara, Türkiye

Jun 2024 – Jul 2024

Summer School

Attended Numerical Analysis lecture covering topics such as Interpolation, Least Square Problem, Finite Difference Methods and Finite Element Method, held at Middle East Technical University (METU).

NOTABLE SKILLS

- **Grant Writing**

Successfully secured the TÜBİTAK 2214-A International Research Fellowship for Ph.D. Students for a one-year research project at the University of Maryland, MD, USA.

- **Project Management**

Independently developed and executed the research project, which was supported by TÜBİTAK.

COMPUTER SKILLS

- Technical \LaTeX , MS Office (Word/Excel/PowerPoint), Canva
- Programming Python (NumPy, SciPy, Matplotlib), Maple
- Environments Docker, Git, VS Code, Google Colab, Jupyter
- Bioinformatics Data analysis, Data visualization

SERVICE AND SCIENCE OUTREACH

- **Invited Panelist** | International Day of Women and Girls in Science, Bilkent University (2026)
- **Mentor** | Directed Reading Program Türkiye (2025)
- **Organizer** | Mathematical Modeling Symposium (2025)
- **Co-Coordinator** | Young Mathematicians Research Symposia Platform (2024 – present)
- **Founder** | Initiated and led the founding of the Young Mathematicians Research Symposia Platform in Türkiye with the support of Prof. Aslı Pekcan Yıldız from Hacettepe University.
- **Mentor** | Directed Reading Program Türkiye (2024)

LANGUAGE SKILLS

Turkish (Native), English (Advanced)

REFERENCES

Available on request