

# Amjad Khan

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## Contact:

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[Google Scholar](#) [GitHub](#) account

## Employment:

- Limited-Term Assistant Professor, Department of Mathematics and Statistics, Part-time academic staff, Dalhousie University, Halifax, Canada (January 1, 2021 to April 30, 2021)
- Postdoctoral Fellow, Faculty of Computer Science, Dalhousie University, Halifax, Canada (April, 2020 - Present)
- Teaching & Research Assistant, Department of Applied Mathematics, University of Western Ontario (UWO), London, Canada (September 2015 - February 2020)
- Teaching & Research Assistant, Department Of Mathematics & Statistics, McMaster University, Hamilton, Canada ( September 2013 - April 2015)
- Lecturer in Mathematics, National University of Sciences and Technology (NUST), Islamabad, Pakistan (2009 - 2013)

## Education:

- PhD in Applied Mathematics, Western University, Canada (2015–2020)  
*Supervisor:* [Lindi M. Wahl](#)  
[Phage-Bacteria Interaction and Prophage Sequences in Bacterial Genomes](#)
- MSc in Mathematics, McMaster University, Canada (2013–2015)  
*Supervisor:* [Dmitry Pelinovsky](#)  
[Approximations of lattice dynamics](#)
- MPhil in Mathematics, NUST, Pakistan (2006–2009)
- BSc in Mathematics & Computer Sciences, Pakistan (2000–2004)

## Research

### Interests:

- Mathematical Biology
- Mathematical Modelling (ODEs, PDEs and Individual based models)
- Bioinformatics
- Dynamical Systems & Bifurcation Analysis

## Teaching

### Experience

- Instructor, *Financial Mathematics*, *MATH 3900 / ECON 3900*, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada – Winter 2021
- Teaching Assistant, *Differential Equations*, *Probability for Life Sciences*, Department of Applied Mathematics, Western University, London, ON, Canada– 2019
- Teaching Assistant, *Calculus with Analysis for Statistics*, Department of Applied Mathematics, Western University, London, ON, Canada – 2018
- Instructor, *Calculus 2*, School of Applied Science and Technology, Fanshawe College, London, ON, Canada – 2018

- Instructor, *Business Mathematics*, Lawrence Kinlin School of Business, Fanshawe College, London, ON, Canada – 2017
- Teaching Assistant, *Applied Mathematics for Engineers*, Department of Applied Mathematics, Western University, London, ON, Canada – 2015, 2016 & 2017
- Teaching Assistant, *Introduction to Differential Equations*, Department of Mathematics & Statistics, McMaster University, Hamilton, On, Canada – 2015
- Teaching Assistant, *Engineering Mathematics*, Department of Mathematics & Statistics, McMaster University, Hamilton, On, Canada – 2014
- Teaching Assistant, *Linear Algebra*, Department of Mathematics & Statistics, McMaster University, Hamilton, On, Canada – 2014
- Teaching Assistant, *Linear Algebra*, Department of Mathematics & Statistics, McMaster University, Hamilton, On, Canada – 2013
- Instructor, *Differential Equations & Transforms*, NUST Institute of Civil Engineering, NUST, Islamabad, Pakistan – 2013
- Instructor, *Numerical Methods*, NUST Institute of Civil Engineering, NUST, Islamabad, Pakistan – 2012
- Instructor, *Calculus and Analytical Geometry*, NUST Institute of Civil Engineering, NUST, Islamabad, Pakistan – 2012
- Instructor, *Probability & Statistics*, NUST Institute of Civil Engineering, NUST, Islamabad, Pakistan – 2011
- Instructor, *Calculus and Analytical Geometry*, NUST Institute of Civil Engineering, NUST, Islamabad, Pakistan – 2011
- Instructor, *Calculus and Analytical Geometry*, NUST Institute of Civil Engineering, NUST, Islamabad, Pakistan – 2010
- Instructor, *Numerical Methods*, NUST Institute of Civil Engineering, NUST, Islamabad, Pakistan – 2009

## **Publications:**

- Amjad Khan, Alita R. Burmeister, and Lindi M. Wahl. Evolution along the parasitism-mutualism continuum determines the genetic repertoire of prophages. *PLOS Computational Biology*, 16(12):1–19, 2020
- Amjad Khan and Lindi M. Wahl. Quantifying the forces that maintain prophages in bacterial genomes. *Theoretical Population Biology*, 133:168–179, 2020. Fifty years of Theoretical Population Biology.
- Amjad Khan, Lindi M. Wahl, and Pei Yu. Phage Therapy and Antibiotics for Biofilm Eradication: A Predictive Model. In D. Marc Kilgour, Herb Kunze, Roman Makarov, Roderick Melnik, and Xu Wang, editors, *Recent Advances in Mathematical and Statistical Methods*, volume 259, pages 375–383. Springer International Publishing, Cham, 2018. Series Title: Springer Proceedings in Mathematics & Statistics.
- Amjad Khan and Dmitry E. Pelinovsky. Long-time stability of small FPU solitary waves. *Discrete & Continuous Dynamical Systems - A*, 37(4):2065–2075, 2017.

## **Conferences and Poster Presentations**

- Systems Modeling in the Pharmaceutical Industry - Problem Solving Workshop. August 12 - 16, 2019, The Fields Institute, Toronto, Ontario, Canada.
- Amjad Khan, Lindi M. Wahl, The Evolutionary Forces Acting on Prophages:

A Mathematical Study. Annual Meeting and Conference of the Society for Mathematical Biology (SMB 2019), July 21-26, SMB 2019 Annual Meeting at Montral, Qubec, Canada.

- Lindi M. Wahl, Khan A., Blurring the Lines between Predator and Prey: The Evolution of Temperate Viruses. Pokhara, Nepal June 28, 2019.
- Amjad Khan, Lindi M. Wahl, Mathematical study of antibiotic and phage therapy in bacterial biofilm colonies. “Workshop on the Role of Mathematics in Combatting Antibiotic Resistance and Developing Novel Antibacterials” May 14, 2018 at The Fields Institute, Toronto, Ontario, Canada.
- Amjad Khan, Lindi M. Wahl, Mathematical Model of the Prophage Size Distribution in Bacterial Genomes. “Canadian Society of Applied and Industrial Mathematics (CAIMS 2018)” June 4 to 7, 2018 at Ryerson University in Toronto, Ontario, Canada.
- Amjad Khan, Lindi M. Wahl, Population dynamics of phages and biofilm bacteria. “The IV AMMCS International Conference”, August 20-25, 2017, Waterloo, Ontario, Canada
- Amjad Khan A., Dmitry Pelinovsky, [Approximations of the lattice dynamics](#). April 21, 2015, Department of Mathematics and Statistics, McMaster University, Hamilton, Ontario, Canada.

## Awards and Scholarships

- Student paper prize, [AMMCS International Conference, Waterloo, Ontario, Canada -August 20-25, 2017](#).
- Graduate Research Scholarship (2015-2019), Western University, London, Ontario, Canada
- Graduate Research Scholarship (2013- 2015), McMaster University, Hamilton, Ontario, Canada
- Scholarship for M.Phil. studies (2007- 2009), Higher Education Commission (HEC), Islamabad, Pakistan

**Technical Skills** Experience with computers and programming languages on Linux and windows operating systems:

- C++
- Python
- MATLAB
- T<sub>E</sub>X (L<sup>A</sup>T<sub>E</sub>X)
- Maple