

Nishant Chandgotia

CONTACT INFORMATION

Centre for Applicable Mathematics
Tata Institute of Fundamental Research,
India.

E-mail: nishant.chandgotia@gmail.com
<https://nishantchandgotia.github.io/>

RESEARCH INTERESTS Ergodic Theory and Dynamical Systems, specifically, Symbolic Dynamics and related areas of Harmonic Analysis, Statistical Physics and Probability.

CURRENT AFFILIATION

Tata Institute of Fundamental Research, Bangalore

Reader (Tenure-track position), since September, 2020.

PREVIOUS AFFILIATIONS

Einstein Institute of Mathematics, Hebrew University of Jerusalem

Postdoctoral Fellow, October, 2018 - August, 2020

School of Mathematical Sciences, Tel Aviv University, Tel Aviv

Postdoctoral Fellow, June 2016 - September 2018

ICERM, Brown University,

Postdoctoral Fellow, February 2016 - May 2016

School of Mathematical Sciences, Tel Aviv University, Tel Aviv

Postdoctoral Fellow, October 2015 - January 2016

EDUCATION

University of British Columbia, Vancouver

Ph.D., Mathematics, 2011 - 2015

- Advisor: Dr. Brian Marcus
- Area of Study: Symbolic Dynamics, Probability Theory

M.Sc., Mathematics, September 2009 - 2011

- Advisor: Dr. Brian Marcus
- Area of Study: Symbolic Dynamics, Probability Theory

Indian Statistical Institute, Bangalore

B.Math., 2006-2009

PUBLICATIONS

- Borel factors and embeddings of systems in subshifts *with Spencer Unger*
Arxiv:2203.09359, 2022
- Predictive Sets *with Benjamin Weiss*
Arxiv:1911.04935; Stochastics and Dynamics, 2020
- Mixing properties of colorings of the \mathbb{Z}^d lattice *with Noga Alon, Raimundo Briceño, Alexander Magazinov and Yinon Spinka*
Arxiv:1903.11685; Combinatorics, Probability and Computing, 2020
- Borel subsystems and ergodic universality for compact \mathbb{Z}^d -systems via specification and beyond *with Tom Meyerovitch*
Arxiv:1903.05716; Journal of London Mathematical Society, 2021
- Delocalization of Uniform Graph Homomorphisms from \mathbb{Z}^2 to \mathbb{Z} *with Ron Peled, Scott Sheffield and Martin Tassy*
Arxiv:1810.10124; Communications in Mathematical Physics, 2021
- Kirszbraun-Type Theorems for Graphs *with Igor Pak and Martin Tassy*
Arxiv:1710.11007; Journal of Combinatorial Theory, Series B (2018)
- Rational Ergodicity of Step Function Skew Products *with Jon Aaronson and Michael Bromberg*
Arxiv:1703.09003; Journal of Modern Dynamics, 13:1-42, (2018).
- Mixing Properties for Hom-Shifts and the Distance between Walks on Associated Graphs *with Brian Marcus*
Arxiv:1607.08357; Pacific J. Math (2017), 294 (2018), no. 1, 41-69.
- Four-Cycle Free Graphs, the Pivot Property and Entropy Minimality
Arxiv:1411.4029; Ergodic Theory Dynam. Systems 37 (2017), no. 4, 1102-1132.
- A Generalisation of the Hammersley-Clifford Theorem on Bipartite Graphs
Arxiv:1406.1849; Trans. Amer. Math. Soc. 369 (2017), no. 10, 7107-7137.
- Markov Random Fields, Markov Cocycles and the 3-coloured Chessboard *with Tom Meyerovitch*
Arxiv:1305.0808; Israel J. Math. 215.2 (2016): 909-964.
- One Dimensional Markov Random Fields, Markov Chains and Topological Markov Fields *with Guanyue Han, Brian Marcus, Tom Meyerovitch and Ronnie Pavlov*
Arxiv:1112.4240; Proc. Amer. Math. Soc. 142 (2014), 227-242.

SELECTED TALKS AND PRESENTATIONS

- Some questions about tilings
TIFR-CAM Colloquium, 2022,
- About Predictive Sets
MIT Probability Seminar, 2021,
- About Riesz Sets
Analysis and Probability Research Group Seminar at the Indian Institute of Science, 2021,
- Universality in tilings: Some old results and some new
Conference on Algebraic and Combinatorial Invariants of Subshifts and Tilings, 2021,
- Uniqueness of clusters in percolation
Working Seminar in Dynamics at University of Utah, 2020,
- Recent progress on tiling problems
Lunch seminar in dynamics, Hebrew University of Jerusalem, 2020,

- How much do you need to know to know a process?
Expanding Dynamics Seminar V, 2020,
- Predictive Sets
Expanding Dynamics Seminar III, Torun ETDS Seminar, Jagiellonian University ETDS Seminar, Universidad Autónoma de San Luis Potosí, 2020,
- Domino tilings in higher dimensions
Massachusetts Institute of Technology, University of Fribourg, 2020.
- Many questions and a few answers about hom-shifts and rectangular tiling shifts in higher dimensions.
In the "Symbolic Dynamical Systems" workshop in CMO, Mexico, 2019.
- Modelling Processes on the \mathbb{Z}^d -lattice.
In Bar-Ilan University, Israel, 2018.
- Some universal models for \mathbb{Z}^d actions.
At the Meeting on Infinite Ergodic Theory & Related Fields, Israel, 2018.
- Hom-shifts and some associated problems.
At the University of Turku, Finland, 2018.
- Irrational Rotations, Random Affine Transformations and the Central Limit Theorem
At the University of California in Los Angeles, the Weizmann Institute, Technion Institute of Technology, Tata Institute of Fundamental Research in Mumbai, Indian Institute of Technology in Mumbai, 2017.
- Some Strange Universality Results among Hom-Shifts
At the Bangalore Probability Seminar, IISc, 2016.
- Four Talks on Hom-Shifts
At the Transversal Aspects of Tilings, Oléron, 2016.
- An Introduction to Hom-Shifts
At the Workshop on Dynamical Systems and Related Topics in the University of Maryland, College Park, 2016.
- Distance between Walks on Graphs
At the Dartmouth College, the University of Denver, the University of Kansas and the Wright University, 2016.
- Four Cycle Free Graphs and Entropy Minimality
At the Tel Aviv University, Tel Aviv, November, 2015.
- Four Cycle Free Graphs and Entropy Minimality
At the Tata Institute of Fundamental Research, Mumbai, July, 2015.
- Pivot Property for $Hom(\mathbb{Z}^d, \mathcal{H})$
At the Workshop on Combinatorics and Applications, Shanghai, April, 2015.
- Four-cycle Free Graphs and Entropy Minimality
At the Workshop on Symbolic Dynamics on Finitely Presented Groups, Santiago, December, 2014.
- Graph Foldings and Markov Random Fields
At the Statistical and Mathematical Unit, Indian Statistical Institute, Kolkata, August, 2014.
- Four-cycle Free Graphs and Entropy Minimality
At the Pingree Park Dynamics Workshop, July, 2014.
- Four-cycle Free Graphs and Entropy Minimality
At the University of Victoria, March, 2014.
- Graph Foldings and Markov Random Fields
At the Combinatorics Seminar in the Dartmouth College, February, 2014.
- Markov Random Fields and the 3-coloured Chessboard
At the Symbolic Dynamics Special Session in the Mathematical Congress of the Americas, 2013.
- Markov Random Fields and the Pivot Property
At the Indian Statistical Institute in Bangalore, July, 2013.
- Markov Random Fields, Markov Cocycles and the Pivot Property

At the Automata Theory and Symbolic Dynamics Workshop in Vancouver, 2013.

TEACHING
EXPERIENCE

Institute of Mathematics at the Jagiellonian University, Poland.

A course in multidimensional symbolic dynamics
2019.

University of British Columbia, Vancouver

Teaching Assistant - Tutor, Grader,
September 2009- 2015.

Instructor for Math 105-209,
Term 2, Winter Session, 2013.

AWARDS AND
FELLOWSHIPS

- **Four Year Doctoral Fellowship**,
University of British Columbia, Vancouver, May, 2012- May-2015.
- **Faculty of Science Graduate Fellowship**,
University of British Columbia, Vancouver, September, 2011- May 2012.

REFERENCES

- **Dr. Brian Marcus** (Ph.D. Thesis Advisor),
University of British Columbia, Vancouver. (e-mail: marcus@math.ubc.ca)
- **Dr. Jon Aaronson**,
Tel Aviv University, Israel. (e-mail: aaro@post.tau.ac.il)
- **Dr. Tom Meyerovitch**,
Ben-Gurion University of the Negev, Israel. (e-mail: mtom@bgu.ac.il)
- **Dr. Ronnie Pavlov**,
University of Denver, Denver. (e-mail: rpavlov@du.edu)