



INVITED TALK

by

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entitled

Local algorithms, Conway-Lagarias-Thurston tiling groups and finitely dependent processes

Abstract: Suppose you were given a set of tiles T on the integer lattice $\mathbb{Z}^2$ and wanted to find out whether a given region can be tiled by T . Conway, Lagarias, and Thurston paved the way for answering such a question via some tools coming from combinatorial group theory and analysis. On the other hand, suppose you were just given some tiles on a sparse but dense set of locations in $\mathbb{Z}^2$, and you wanted to know if T can complete the tiling by looking at what is given locally. The answer to this question comes from local algorithms starting with work by Nathan Linial. Interestingly, these cover complementary cases and are related to a host of questions arising from symbolic and Borel dynamics, probability, and combinatorics. We will give a gentle introduction to these topics and describe how they relate to finitely dependent processes. This is all in joint work with Aditya Thorat. A large part of the talk will be accessible to senior undergraduate students.

Nishant Chandgotia earned his B.Math. from ISI Bangalore and then moved to the University of British Columbia for his Masters and PhD degrees. He has postdoctoral experience from Tel Aviv University, Brown University, and the Einstein Institute of Mathematics, Hebrew University of Jerusalem. He is currently a faculty member at the Centre for Applicable Mathematics, Tata Institute of Fundamental Research (TIFR-CAM), Bangalore. He is a recipient of the Indian National Science Academy (INSA) Associate Fellowship in 2023. His research interests lie in Ergodic Theory and Dynamical Systems, specifically, Symbolic Dynamics and related areas of Harmonic Analysis, Statistical Physics, and Probability.



📍 Research Scholar Room
📅 September 29, 2025
🕒 02:00 P.M.