Vidit Nanda

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Citizen of India, *Permanent Resident* of the USA

The Institute for Advanced Study,
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Employment

- **The Institute for Advanced Study** — Princeton, USA
  Friends of the Institute Member, School of Mathematics — Sep 2017 – Present
- **The University of Oxford** + **The Alan Turing Institute** — Oxford/London, UK
  Alan Turing Research Fellow, Mathematics — Oct 2016 – Present
- **The University of Pennsylvania** — Philadelphia, USA
  Post-Doctoral Researcher, Mathematics — Sep 2012 – Aug 2016

Education

- **Rutgers University** — New Brunswick, USA
  Ph.D. in Mathematics — Aug 2006 – Aug 2012
- **Georgia Institute of Technology** — Atlanta, USA
  M.S. in Applied Mathematics — Aug 2004 – May 2006
- **Georgia Institute of Technology** — Atlanta, USA
  B.S. in Computer Engineering & Minor in Mathematics — Aug 2000 – May 2004

Awards

PNNL High Performance Data Analytics contract, 2015 – 2016

Penn Math Good Teaching Awards, Spring 2014 and Fall 2015

Publications

14. Compressing and reconstructing group actions on graphs (with L Carbone and Y Naqvi)
    In preparation
13. Reconstructing functions between Euclidean compacta (with F Chazal and S Ferry)
    In preparation
12. Local cohomology and stratification
    Under review, arXiv:1707.00354 [math.AT] (2017)
11. Discrete Morse theory and classifying spaces (with D Tamaki and K Tanaka)
    Under review, arXiv:1612.08429 [math.AT] (2016)
10. Discrete Morse theory and localization
    Under review, arXiv:1510.01907 [math.AT] (2015)
9. Topological signals of singularities in simplicial Ricci Flow (with P Alsing et al)
   Axioms, 6(3) Article 24 (2017)
8. Higher interpolation and extension for persistence modules (with P Bubenik and V de Silva)
   SIAM Journal on Applied Algebra and Geometry, 1(1), 272–284 (2017)
7. Discrete Morse theory for computing cellular sheaf cohomology (with J Curry and R Ghrist)
   Foundations of Computational Mathematics, 16(4), 875–897 (2016)
6. A topological measurement of protein compressibility (with M Gameiro et al)
   Japan Journal of Industrial and Applied Mathematics, 32(1), 1–17 (2015)
5. Reconstructing functions from random samples (with S Ferry and K Mischaikow)
   Journal of Computational Dynamics, 1(2), 233–248 (2014)
4. Simplicial models and topological inference in biological systems (with R Sazdanović)
   Chapter 6 of **Discrete and Topological Models in Molecular Biology**, Springer (2014)
3. Discrete Morse theoretic algorithms for computing homology of complexes and maps
   (with S Harker, K Mischaikow and M Mrozek)
   Foundations of Computational Mathematics, 14(1), 151–184 (2014)
2. Geometry in the space of persistence modules (with V de Silva)
   Proc. 23rd Annual Symposium on Computational Geometry, 397–404 (2013)

1. Morse theory for filtrations and efficient computation of persistent homology (with K Mischaikow)
   Discrete and Computational Geometry, 50(2), 330–353 (2013)

Talks

(2017)

Aug *Applied Algebraic Topology Workshop*, Hokkaido University, Japan
Jul *Foundations of Computational Mathematics Conference*, Universitat Barcelona, Spain
Jul *Institute of Perception, Action and Behaviour (IPAB) Seminar*, University of Edinburgh, UK
Jun *Mathematical Underpinnings of Data Analysis Session*, Alan Turing Institute, UK
Apr *Pure Mathematics Colloquium*, University of Sheffield, UK
Apr *3C in G Workshop on Computational Algebra*, University of Cambridge, UK
Mar *Geometry Seminar*, (King's + University) College London, UK
Mar *Research Fellow Short Talk*, Alan Turing Institute, UK (video)
Mar *Algebraic and Symplectic Geometry Seminar*, University of Oxford, UK
Feb *Department Colloquium*, Wesleyan University, USA
Feb *Department Colloquium*, Penn State University, USA
Feb *Topology Seminar*, University of Aberdeen, UK
Jan *Topology Seminar*, University of Oxford, UK

(2016)

Aug *Alpine Algebraic and Applied Topology Conference*, Saas Almagell, Switzerland
May *Topology, Geometry and Data Analysis Conference*, Ohio State University, USA
Apr *IAS + Penn + Rutgers Topology Workshop*, University of Pennsylvania, USA
Mar L^2 *Geometry and Topology Seminar*, Lafayette College + Lehigh University, USA
Mar *New York Applied Topology Seminar*, Columbia University, USA
Mar *The MacPherson Seminar*, Institute for Advanced Study, USA
Feb *Department Colloquium*, San Francisco State University, USA
Jan *Joint Mathematics Meetings*, Seattle, USA

(2015)

Dec *Canadian Mathematical Society (Winter) Meeting*, University du Québec à Montréal, Canada
Nov *Geometry and Topology Seminar*, University of Florida, USA
Sep *The Alan Turing Institute Scoping Workshop*, University of Oxford, UK
Sep *Computational Applied Topology (CAT) School*, University of Oxford, UK
Aug *Applied Topology and High-Dimensional Data Analysis Workshop*, University of Victoria, Canada
Apr *Applied Algebraic Topology Research Network*, Online Seminar
Jan *Department Colloquium*, Michigan State University, USA

(2014)

Nov *AMS Graduate Student Chapter Seminar*, Rutgers University, USA
Nov *Discrete, Computational and Algebraic Topology*, University of Copenhagen, Denmark
Oct *Workshop on Persistent Homology for the Biosciences*, Michigan State University, USA
Jul *SIAM Annual Meeting*, Chicago, USA
Jul *DIMACS REU Semniar*, Rutgers University, USA

(2013)

Oct *Geometry, Topology and Data Seminar*, Ohio State University, USA
Jul *29-th Annual Symposium on Computational Geometry*, UniRio, Brazil.
Jun *Workshop on Topology and Dynamics*, Kyoto University (RIMS), Japan
Apr *Geometry and Topology Seminar*, University of Pennsylvania, USA
Mar *Department Colloquium*, Cleveland State University, USA

(2012)

Dec *The MacPherson Seminar*, Institute for Advanced Study, USA
Nov *Applied Topology Seminar*, Shinshu University, Japan
Jan *Topology and Geometry Seminar*, Rutgers University, USA

Service

Hilary 2017 – Trinity 2017: Member of the **Early Career Researchers Committee** at Oxford

Fall 2015 – Spring 2016: Member of the **Putnam Prize Commitee** at Penn

Fall 2014 – Spring 2016: Co-organizer of the **Applied Topology Seminar** at Penn

Teaching

(*Penn*)

Fall 2015: Instructor for *Single-variable calculus for engineers*
Summer 2014: Co-instructor for the *Pre-freshman program*
Spring 2014: Instructor for *Advanced linear algebra*
Spring 2013: Lead Teaching Assistant (TA) for *Calculus in a single variable*, on Coursera

(*Rutgers*)

Summer 2011: Instructor for *Multivariable calculus*

Fall 2010: TA for *Multivariable calculus*

Spring 2010: TA for *Multivariable calculus*

Fall 2009: TA for *Multivariable calculus*

(Link to Student Feedback)

Computing

Projects: The Perseus software project for computing persistent homology

Programming: C/C++ with STL, Java, LaTeX, CSS/HTML, Matlab, Mathematica and Maple