Soumyashant Nayak

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Postdoctoral Affiliation	*Postdoctoral Researcher in Bioinformatics* at the Institute for Translational Medicine and Therapeutics, Smilow Center for Translational Research in the **Perelman School of Medicine, University of Pennsylvania**. (September 2016 - present) Mentored by **Gregory Grant**.
Education	*Philosophiae Doctorate in Mathematics,* awarded by the **University of Pennsylvania**, Philadelphia in August 2016. Thesis - *On the Diagonals of Projections in Matrix Algebras over von Neumann Algebras* Advisor - **Richard V. Kadison** *Bachelor of Mathematics (Hons.),* Mathematics (2008-2011) **Indian Statistical Institute**, Bangalore Centre
Research Interests	Operator Algebras, Representation Theory, Statistical Methods in Bioinformatics, Systems Biology

Awards and Honors

- Benjamin Franklin Fellowship - University of Pennsylvania, 2011 - 2016.
- KVPY fellowship , Dept. of Science and Technology, Govt. of India, 2006-2011
- Selected for the Summer Research Fellowship Programme (SRFP) for 2 consecutive years, 2010-2011 by Indian Academy of Sciences
- Selected among top 30 students in India in the Indian National Mathematical Olympiad (INMO) for 3 consecutive years, 2006-2008
- Gold Medal in International Olympiad on Astronomy and Astrophysics (IOAA) 2007 held at Chiang Mai, Thailand
- Bronze Medal in International Astronomy Olympiad (IAO) 2006 held at Mumbai, India
- Silver Medal in International Astronomy Olympiad (IAO) 2005 held at Beijing, China
- Placed among top 1% in National Standard Examination in Physics 2007

Publications and Preprints

Mathematics Research :

- **S. Nayak;** *The Hadamard Determinant Inequality - Extensions to Operators on a Hilbert Space*, Journal of Functional Analysis (in press - October 2017). [DOI:10.1016/j.jfa.2017.10.009], [arXiv:1704.05421]
- **S. Nayak**; *The Douglas Lemma for von Neumann Algebras and Some Applications* (submitted, 16 pp). [arXiv:1707.04378]
- M. Gaál, **S. Nayak**; *On a class of determinant preserving maps for finite von Neumann algebras* (submitted, 11 pp). [arXiv:1711.08786]
- **S. Nayak**; *A New Invariant for Unital Rings - Towards a Framework for Rank Identities* (in preparation, $\approx$ 20 pp).

Bioinformatics Research :
- Arjun Sengupta, Seth D Rhoades, Eun Ji Kim, **Soumyashant Nayak**, Gregory R Grant, Peter Meerlo, Aalim M Weljie; *Sleep restriction induced energy, methylation and lipogenesis metabolic switches in rat liver*, The International Journal of Biochemistry and Cell Biology (2017) (in press - August 2017). [DOI:10.1016/j.biocel.2017.08.014]
- **S. Nayak**, Gregory Grant; *A Study of Iso-Significance Functions - Ranking Biological Features by Differential Abundance* (in preparation, $\approx$ 10 pp).

Teaching Experience

Instructor, University of Pennsylvania
- Math 241, Calculus IV, Introduction to Partial Differential Equations (Summer Session II, 2016)
- Math 170, Ideas in Mathematics (Full Summer Session 2016)
- Official Math Help Tutor, All Undergraduate Courses (Summer Session II, 2015)
- Math 114, Introduction to Multivariable Calculus (Summer Session II, 2013)

Teaching Assistant, University of Pennsylvania
- Math 608, Complex Analysis, Fall 2014
- Math 509, Advanced Analysis, Spring 2014
- Math 180, Analytical Methods in Economics, Law and Medicine, Fall 2013
- Math 425, Partial Differential Equations, Spring 2013
- Math 312, Linear Algebra, Fall 2012

Conferences Attended
- AMS Fall Southeastern Sectional Meeting, University of Central Florida, Orlando. 23-24 September, 2017.
- COSy - 2017 at Lakehead University. 29 May - 1 June, 2017.
- Penn Symposium on Mathematical and Computational Biology, University of Pennsylvania. 22-23 May, 2017.
- Noncommutative Geometry and Operator Algebras (NCGOA) Spring Institute at University of Bonn. 17-25 May, 2016.
- CBMS conference at University of Wyoming, Laramie. 8-12 June, 2015.
- RMMC Summer School at University of Wyoming, Laramie. 1-5 June, 2015.
- Great Plains Operator Theory Symposium (GPOTS) - 2015 at Purdue University, West Lafayette. 26-30 May, 2015.
- Classification Of C*-Algebras, Flow Equivalence of Shift Spaces, And Graph and Leavitt Path Algebras at University of Louisiana, Lafayette. 11-15 May, 2015.
- Lecture Series on Quantum Groups by Dr. Moritz Weber at the Institute of Mathematical Sciences, Chennai. 5-24 Jan, 2015.
- 2013 CNA Summer School: Topics in Nonlinear PDEs and Calculus of Variations, and Applications in Materials Science, at CMU, Pittsburgh. 29 May - 7 June, 2013.
- NCGOA - 2013 at Vanderbilt University, Nashville. 3-9 May, 2013.
- Riviere-Fabes Symposium at University of Minnesota, Twin Cities. 19-21 April, 2013.
- 3rd Ohio River Analysis Meeting at University of Cincinnati. 9-10 March, 2013.

Talks   *Conference Talks*
- *AMS Fall Southeastern Sectional Meeting* (23 September, 2017), University of Central Florida, Orlando.

- *Canadian Operator Algebras Symposium* (30 May, 2017), Lakehead University, Thunder Bay.

- *RMMC Summer School* (2 June, 2015), University of Wyoming, Laramie.

- *Great Plains Operator Theory Symposium* (27 May, 2015), Purdue University, West Lafayette.

Colloquia and Seminar Talks
- *SOPM - 2017* (24 June, 2017) NISER, Jatni, Bhubaneswar.

- *Analysis Seminar* (14 April, 2017) Drexel University, Philadelphia.