Curriculum Vitae   Suchetana Sadhukhan

ADDRESS	Centro Internacional de Ciencias,
	Campus Chamilpa,
	Cuernavaca-62131, Morelos, México
PHONE	+52 7772405413
EMAIL	s.suchetana@gmail.com

Personal information

DATE OF BIRTH	June 14, 1987
PLACE OF BIRTH	Serampore, West Bengal, India
SEX	Female
MARITAL STATUS	Married
NATIONALITY	Indian

Research interests

- Equilibrium and non-equilibrium, linear and non-linear statistical mechanics
- Random Matrix Theory
- Econophysics
- Air Pollution

Academic positions

MAR 2021 -TILL NOW	Scientific Collaborator
	Centro Internacional de Ciencias, Morelos, México
MAR 2019 -FEB 2021	Postdoctoral Researcher (DGAPA)
	Instituto de Ciencias Físicas, UNAM, Morelos, México
AUG 2018 -FEB 2019	Investigador Asociado 'C'
	Instituto de Ciencias Físicas, UNAM, Morelos, México

Academic Records

Ph. D, 2011-2018
- Institute: Indian Institute of Technology, Kharagpur
- Thesis title: Statistical analysis of complex systems with dynamical constraint: A random matrix approach
- Thesis supervisor: Prof. Pragya Shukla
- Degree awarded: 20th July, 2018

M. Sc, 2009-2011
- Institute: National Institute of Technology, Rourkela

B. Sc, 2005-2008
- College: Vidyasagar College, University of Calcutta

Achievements

- Reviewer of *Frontiers in Physics*.
- Selected for DGAPA Postdoctoral fellowship, 2019-2021 (highest Latin American fellowship for postdoc).
- Selected as a Candidate for National Researcher, 2019-2021 (economic stimulus approx. $500 USD per month)
- Selected for NET Lectureship on the basis of NET examination in Physical Sciences
  (December 2011, Rank: 275).
- GATE examination in Physical Sciences (2011, All India Rank: 201).

List of publications

1. Criticality in Brownian ensembles.
   Suchetana Sadhukhan, Pragya Shukla
   Phys. Rev. E **96**, 012109 (2017).

2. Extended states with Poisson spectral statistics.
   Triparna Mondal, Suchetana Sadhukhan, Pragya Shukla
   Phys. Rev. E **95**, 062102 (2017).

3. Random matrix ensembles with column/row constraints: II.
   Suchetana Sadhukhan, Pragya Shukla
   J. Phys. A **48**, 415003 (2015).

4. Random matrix ensembles with column/row constraints: I.
   Pragya Shukla, Suchetana Sadhukhan
   J. Phys. A **48**, 415002 (2015).

Submitted article

Dynamics of market states and risk assessment.
Hirdesh K Pharasi, Eduard Seligman, Suchetana Sadhukhan, Thomas H Seligman
arXiv preprint arXiv:2011.05984 (2021).

Book in progress

Invited book chapter on Dynamics in the space of correlation matrices with applications to financial markets to be published by New Economic Windows: Springer (2021).

Manuscripts in progress

- Dynamics in the space of correlation matrices with applications to financial markets
  Suchetana Sadhukhan, Hirdesh Kumar Pharasi, Francois Leyvraz, Anirban Chakraborti, Thomas Seligman.

- Criticality in Brownian ensembles during GOE to GUE transition
  Suchetana Sadhukhan, Pragya Shukla

- Dynamical studies of pollution near and far from streets and highways in Baden Württemberg, Germany
  Suchetana Sadhukhan, Alf Löeffler, Thomas Seligman

Projects undertaken

- Completed an experimental research project titled "*Synthesis and Characterization of Polymer Electrolyte* " as a part of semester project (2010).
  Advisors: Dr. Siddharth K. Jena, Prof Dillip Kr Pradhan, NIT, Rourkela.

- Completed a research project titled "*Density Matrix Re-normalization Group*" as a part of Summer Training Programme (May-July, 2010).
  Advisor: Prof. Somendra M Bhattacharjee, Institute of Physics, Bhubaneswar.

- Completed a research project titled "*Study of thermodynamic quantities of some quantum mechanical systems*" after completing B.Sc (July-December, 2008).
  Advisor: Dr. Debnarayan Jana, University of Calcutta, Kolkata.

Talks/Posters given	

- Talk on *Dynamics of financial markets in correlation matrix space*
  during online International Conference on Classical and Quantum Dynamics of Complex Systems and Applications at Centro Internacional de Ciencias, Cuernavaca, 22nd March - 01st April, 2021.

- Talk on *Dynamical studies of pollution near and far from streets and highways in Baden Württemberg, Germany*
  during online International Conference on Classical and Quantum Dynamics of Complex Systems and Applications at Centro Internacional de Ciencias, Cuernavaca, 22nd March - 01st April, 2021.

- Talk on *Dynamical studies of pollution near and far from streets and highways in Baden Württemberg, Germany*
  during online International Conference on AI in Complex Socio-Economic Systems and Public Policy at Jindal School of Government and Public Policy, $20 - 22^{th}$ January, 2021.

- Talk on *Correlation-matrix trajectories and market crashes: COVID-19, Lehman Brothers, Black Monday Crash*
  during online international 8th symposium: Economics, physics and finance and School and Gathering on Multivariate analysis and some applications at Instituto de Cinecías Fisicas (ICF), UNAM, Mexico, $07 - 18^{th}$ December, 2020.

- Talk on *Column-constraint chiral Circulant ensemble*
  during online conference on Transport at the Nanoscale at Instituto de Cinecías Fisicas (ICF), UNAM, Mexico, $12 - 16^{th}$ October, 2020.

- Talk on *Time series analysis of air pollution at Germany*
  during International conference on *UdG-UV-UNAM-BUAP Gathering: Open systems, transport, Time series, Classical and Quantum Dynamics*, International Science Center (CIC), UNAM, $16 - 29^{th}$ February, 2020.

- Talk on *Statistical analysis of column constrained ensembles*
  at the conference on Analytical and numerical methods for open classical and quantum systems at the International Science Center (CIC), UNAM, 09th June to 12th July, 2019.

- A group seminar on *Random matrix ensembles with column / row constraints*
  at Instituto de Cinecías Fisicas (ICF), UNAM, Mexico during August 2018.

- Talk on *Random matrix ensembles with column/ row constraints.*
  at 4th International Conference on Complex Dynamical Systems and Applications, National Institute of Technology, Durgapur, 16th February, 2016.

- Talk on *Statistical analysis of complex system with Goldstone modes.*
  at Research Scholars' Day, IIT Kharagpur, 21st March, 2015.

- Poster on *Random matrix ensembles with column/ row constraints.*
  at Indian Statistical Physics Community Meeting, IISC Bangalore, $13 - 15^{th}$ February, 2015.

- Poster on *Statistical analysis of complex systems with dynamical constraint: a random matrix approach.*
  at Research Scholars' Day, IIT Kharagpur, 12th April, 2014.

- Talk on *Random matrix ensembles with column/ row constraints.*
  at 8th Conference on Nonlinear Systems and Dynamics (CNSD), IIT Indore, 12th December 2013.

- Poster on *Random matrix ensembles with column/ row constraints.*
  at Spring College on the Physics of Complex Systems, ICTP, Italy, 10th June, 2014.

Schools/ Conferences

International:
- *International Conference on Classical and Quantum Dynamics of Complex Systems and Applications*, Centro Internacional de Ciencias, Cuernavaca, 22nd March - 01st April, 2021.
- *International Conference on AI in Complex Socio-Economic Systems and Public Policy*, Jindal School of Government and Public Policy, $20 - 22^{th}$ January, 2021.
- *Online international 8th symposium: Economics, physics and finance and School and Gathering on Multivariate analysis and some applications*, Instituto de Cinecías Fisicas (ICF), UNAM, Mexico, $07 - 18^{th}$ December, 2020.
- *Transport at the Nanoscale*, Instituto de Cinecías Fisicas (ICF), UNAM, Mexico, $12 - 16^{th}$ October, 2020.
- *UdG-UV-UNAM-BUAP Gathering: Open systems, transport, Time series, Classical and Quantum Dynamics*, Instituto de Cinecías Fisicas (ICF), UNAM, Mexico, $16 - 29^{th}$ February, 2020
- *UdG-UV-UNAM-BUAP Gathering: Open systems, transport, Time series, Classical and Quantum Dynamics*, International Science Center (CIC), UNAM, $11 - 12^{th}$ February, 2019.
- *Analytical and numerical methods for open classical and quantum systems*, International Science Center (CIC), UNAM, 09th June - 12th July, 2019.
- *7th symposium: Economics, physics and finance*, International Center of Sciences (CIC), UNAM, $12 - 13^{th}$ July, 2019.
- *4th International Conference on Complex Dynamical Systems and Applications*,
  National Institute of Technology, Durgapur, $15 - 17^{th}$ February, 2016.
- *Spring College on the Physics of Complex Systems*, ICTP, Italy, 26 May - 20 June 2014.

National:
- *Indian Statistical Physics Community Meeting*, IISC Bangalore, $13 - 15^{th}$ February, 2015.
- *School on Statistical Physics*, Raman Research Institute, Bangalore, India, March 26-April 7, 2012.
- *DST SERC school on Nonlinear Dynamics*, IISER, Pune, India, Dec 04-24, 2011.

Academic visit

Research group of Prof. Anirban Chakraborti, School of Computational and Integrative Sciences, Jawaharlal Nehru University, New Delhi-110067, India from 14 November 2018-01 December, 2018.

Computational Skills

- Programming Languages : MatLab, Python, FORTRAN, C, C++

- Scientific Packages : Mathematica, Lapack (Linear algebra package)

- Operating Systems: Linux and Windows

Teaching assistantship

- 2014-2015 Spring Semester: First year B.tech general laboratory course
- 2014-2015 Autumn Semester: M.Sc. Integrated 2nd year laboratory on Modern Physics, B.Tech first year laboratory
- 2013-2014 Spring Semester: B.Tech tutorial on waves and optics (Three hours per week)
- 2013-2014 Autumn Semester: B.Tech tutorial on waves and optics (Three hours per week)
- 2012-2013 Spring Semester: M.Sc. Integrated 3rd year laboratory on Electromagnetism and optics, B.tech general laboratory course
- 2012-2013 Autumn Semester: B.tech general laboratory course, M.Sc. Integrated 2nd year laboratory on Modern Physics,
- 2011-2012 Spring Semester: First year B.tech general laboratory course

List of Referees

- Prof. Pragya Shukla
  Indian Institute of Technology,
  Kharagpur,
  West Bengal, PIN - 721302,
  E. Mail: shukla@phy.iitkgp.ernet.in
  Telephone: +91 - 3222 - 283850

- Prof. Thomas H. Seligman
  Instituto de Cinecías Fisicas (ICF),
  UNAM, Mexico.
  E. Mail: seligman@icf.unam.mx

- Prof. Anirban Chakraborti
  Jawaharlal Nehru University,
  New Delhi, India
  E. Mail: anirban@jnu.ac.in

- Prof. Sugata Pratik Khastgir
  Indian Institute of Technology,
  Kharagpur,
  West Bengal, PIN - 721302,
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