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Professional Profile

Professor, School of Computational & Integrative Sciences, JNU
Coordinator, Mathematical & Computational Empowerment Cell, JNU
Consultant, TCS Innovation Labs Delhi

Work History

Jawaharlal Nehru University, India <i>Professor</i>	March, 2014 - till date
École Centrale Paris, France <i>Chercheur Senior (Associate Professor)</i>	2011 – 2014
École Centrale Paris, France <i>Chargé de Recherche (Assistant Professor)</i>	2009 – 2011
Banaras Hindu University, India <i>Lecturer</i>	2005 – 2008
Brookhaven National Laboratory, USA <i>Research Associate</i>	2003 – 2005
Helsinki University of Technology, Finland <i>Senior Researcher</i>	2002 – 2003
Saha Institute of Nuclear Physics, India <i>Research Fellow</i>	1998 – 2002

Research Areas Econophysics & sociophysics; complex systems; computational finance; statistical physics; nanosciences

Education

- 2013** Diplôme d'habilitation à diriger des recherches (Physics)
Université Pierre et Marie Curie (Paris VI), France
"Statistical mechanics applied to socio-economic systems"
Jury: J.-P. Bouchaud, D. Lautier, A. Stella, F. Abergel, J.-P. Nadal, M. Rosenbaum
- 2003** Doctor of Philosophy in Science
Saha Institute of Nuclear Physics (Jadavpur University), India
"Application of Statistical Physics to some Econophysics and Optimization Problems"
Supervisor: B.K. Chakrabarti (India)
Examiners: D. Stauffer (Germany); C. Dasgupta (India); P. Sen (India)
- 1999** Post M.Sc. Associateship (Physics)—*Ranked First*
Saha Institute of Nuclear Physics, India
- 1998** Master in Science (Physics)—*Ranked First*
University of Calcutta, India
- 1996** Bachelor in Science (Physics Honours)
Scottish Church College, University of Calcutta, India

Awards, grants, fellowships

- 2016 Grant of INR 600,000 (approx.) for project "To study the genotoxic effect and differential protein expression level in the directly irradiated cells and through radiation induced bystander effect in presence and absence of Gold nanoparticles of different size and shape" (UFR-60319 of IUAC-UGC, duration August, 2016 – August 2019) as Co-Investigator (along with P.I. Dr. Jaydeep Bhattacharya, School of Biotechnology, JNU).
- 2015 Grant of EUR 240 000 for project "The role of diversity in complex systems" (IUT39-1 of Estonian Research Council, duration 01.01.2015 - 31.12.2020) as Co-Investigator (along with P.I. Els Heinsalu, National Institute of Chemical Physics and Biophysics, Tallinn, Estonia).
- 2014 Grant of INR 1,820,000 (USD 30,000 approx. in 2014) for Project ID-47 under UPE II scheme, JNU, titled "The Sociophysics of International and

National Collaboration in Contemporary India: Modelling Inequalities in Scientific Research”, as Principal Investigator (along with Co-Investigator Dhruv Raina, School of Social Sciences, JNU).

- 2009 **Indian National Science Academy Young Scientist** medal, India
- 2007 Grant of INR 4,000,000 (USD 100,000 approx. in 2007) for Project entitled “*Development of Data Fusion Models and Algorithms for Molecular Recognition in Polymeric Multisensor Platforms*” as Co-investigator, sanctioned by Defence Research & Development Organisation, Ministry of Defence, Government of India.
- 2006 Travel grant and financial support awarded by the ICTP, Trieste, Italy to attend School and workshop in ICTS, Beijing, China
- 2005 Post-doctoral Research Fellowship awarded by Kellogg School of Management, Northwestern University, Evanston, USA – declined
- 2004 Travel grant and financial support awarded by the EXYSTENCE Thematic Institute “From Many-Particle Physics to Multi-Agent Systems” and the Max Planck Institute for the Physics of Complex Systems (MPIPKS), Dresden, Germany
- 2003-2005 Post-doctoral Research Fellowship awarded by Brookhaven National Laboratory, USA
- 2002-2003 Post-doctoral Research Fellowship awarded by Laboratory of Computational Engineering, Helsinki University of Technology, Finland
- 2001 Financial grant awarded by the Graduate College of Scientific Computing, Cologne University, Germany for visiting Cologne University
- 2001 Travel grant and financial support awarded by Organizing Committee, CCP 2001, Aachen, Germany
- 2000 Travel grant and financial support awarded by ICTP, Trieste, Italy for attending summer school and workshop
- 1999 Travel grant and financial support awarded by ICTP, Trieste, Italy for attending summer school and conference
- 1999 Certificate of Merit and Book Grant awarded for ranking “First” in Post-M.Sc.(Physics) in Saha Institute of Nuclear Physics, India
- 1998-2002 Research Fellowship awarded by Saha Institute of Nuclear Physics, India
- 1998 Certificate of Merit awarded for ranking “First” in M.Sc. in University of Calcutta, India
- 1997 Joint UGC-CSIR NET Junior Research Fellowship (CSIR category) and eligibility for Lectureship awarded, India – declined
- 1996 National Scholarship awarded for studying M.Sc., India

Short term visits 2017

- ICF, National Autonomous University of Mexico (UNAM), Cuernavaca, Mexico during June 25-August 12, 2017 as Visiting Professor.
- IISER, Pune during June 19-21, 2017.
- Chennai Mathematical Institute, Chennai during June 6-16, 2017.

2016

- Indian Statistical Institute, Chennai during December 23-26, 2016.
- Chennai Mathematical Institute, Chennai during December 18-22, 2016.
- Saha Institute of Nuclear Physics, Kolkata, India during December 8-17, 2016.
- Indian Institute of Technology, Kanpur during December 5-6, 2016.
- International Christian University -- Mitaka, Tokyo, Japan during November 26-30, 2016.
- Toyo University, Tsurugashima-Saitama, Japan during November 23-26, 2016.
- Iwate Prefectural University, Morioka-Iwate, Japan, during November 20-22, 2016.
- Air Force Training Academy, Bangalore during November 8-9, 2016.
- Air Force Academy, Hyderabad during November 7-8, 2016.
- Politecnico di Torino, Torino, Italy during July 26-28, 2016.
- Ecole Centrale Paris, France during July 23-26, 2016.
- University of Padova, Padova, Italy during July 12-17, 2016.
- Scuola Normale Superiore, Pisa, Italy during July 5-7, 2016.
- University of Rome "La Sapienza", Roma, Italy during July 1-4, 2016.
- Indian Institute of Advanced Study, Shimla, Himachal Pradesh during May 19-June 18, 2016.
- Foundation for Ecological Security, Udaipur, Rajasthan during May 16-18, 2016.
- National Defense Academy, Pune during April 28-29, 2016.
- International Christian University -- Mitaka, Tokyo, Japan during March 23-27, 2016.

2015

- IISER, Mohali during December 19-21, 2015.
- Chennai Mathematical Institute, Chennai for a conference during July 16-17, 2015.
- National Institute of Chemical Physics and Biophysics, Tallinn, Estonia during June 22-26, 2015 as Visiting Professor/Senior Researcher.
- Ecole Centrale Paris, France during June 8-19, 2015 as Visiting Professor.
- Indian Institute of Management, Indore for the workshop on

“Econophysics” on April 10th, 2015.

- School of Basic & Applied Sciences, Department of Physics, Maharaja Agrasen University, Baddi on February 9th, 2015 as a resource person.

2014

- Condensed Matter Physics Division, Saha Institute of Nuclear Physics, India during November 28-December 8, 2014.
- Condensed Matter Physics Division, Saha Institute of Nuclear Physics, India during May 19-June 18, 2014.

2013

- Department of Computer Science, National Defense Academy, Yokosuka, Japan on August 22nd, 2013.
- Department of Software & Information Science, Iwate Prefectural University, Morioka, Japan, during August 8-9, 2013.
- Department of Economics, International Christian University, Tokyo, Japan during July 21-22, 2013.
- Graduate School of Information Science & Technology, Hokkaido University, Sapporo, Japan during July 7- August 31, 2013.
- Theoretical Condensed Matter Physics Division, Saha Institute of Nuclear Physics, India during January 12-19, 2013.
- School of Computational and Integrative Sciences & School of Computer and System Sciences, Jawaharlal Nehru University, India during January 8-11, 2013.
- Bayesian & Interdisciplinary Research Unit, Indian Statistical Institute, India during January 1-7, 2013.

2012

- Theoretical Condensed Matter Physics Division, Saha Institute of Nuclear Physics, India during December 20-31, 2012.
- Department of Physics Galileo Galilei, University of Padova, Italy during June 25-29, 2012.
- Department of Physics Galileo Galilei, University of Padova, Italy during February 27-March 2, 2012.
- Department of Physics, University of Calcutta, India during January 5-6, 2012.

2011

- Centre for Applied Mathematics and Computational Sciences, Saha Institute of Nuclear Physics, India during December 26-30, 2011.
- Department of Physics, Delhi University, India during December 19-23,

2011.

- Graduate School of Information Science & Technology, Hokkaido University, Japan during February 28- March 2, 2011.
- Department of Physics, Kyoto University, Japan during February 24-25, 2011.
- Department of Physics Galileo Galilei, University of Padova, Italy during January 24-28, 2011.

2010

- Centre for Applied Mathematics and Computational Sciences, Saha Institute of Nuclear Physics, India during October 28-November 25, 2010.

2009

- Department of Chemistry, Philipps-Universität Marburg, Germany, during September 15-18, 2009.

2008

- Centre for Applied Mathematics and Computational Sciences, Saha Institute of Nuclear Physics, India during November 14, 2008-January 31, 2009.
- Laboratoire de Mathématiques Appliquées aux Systèmes, Ecole Centrale Paris, France during May 21-24, 2008.
- School of Physical Sciences, Jawaharlal Nehru University, New Delhi, India during May 5-7, 2008.
- Department of Theoretical Physics, Tata Institute of Fundamental Research, India during March 1-8, 2008.

2007

- Centre for Applied Mathematics and Computational Sciences, Saha Institute of Nuclear Physics, India during January 29-February 2, 2007.

2006

- Interdisciplinary Center of Theoretical Studies (ICTS), Chinese Academy of Sciences (CAS), Beijing, China during September 9-25, 2006.
- Centre for Applied Mathematics and Computational Sciences, Saha Institute of Nuclear Physics, India during February 8-18, 2006.

2005

- Centre for Applied Mathematics and Computational Sciences, Saha Institute of Nuclear Physics, India during September 19-November 7, 2005.
- Kelloggs School of Management, Northwestern University, Illinois, USA on April 25th, 2005.

- Bose Institute, Kolkata, India during March 10-14, 2005.
- Physical Research Laboratory, Ahmedabad, India during March 5-10, 2005.
- School of Physical Sciences, Jawaharlal Nehru University, New Delhi and Department of Physics, Delhi University, New Delhi, India during March 1-4, 2005.

2004

- The EXYSTENCE Thematic Institute “From Many-Particle Physics to Multi-Agent Systems” held at the Max Planck Institute for the Physics of Complex Systems (MPIPKS) in Dresden, Germany during August 20-September 16, 2004.
- Laboratory of Computational Engineering, Helsinki University of Technology, Helsinki, Finland during July 18-25, 2004.
- King’s College London, Dept. of Mathematics, London, UK during July 9-18, 2004.
- Rutgers University, Dept. of Physics, New Jersey, USA several times during January, 2004-May, 2005.

2002

- The Institute of Physics, Budapest University of Technology and Economics, Budapest, Hungary, during October 25-November 8, 2002.

2001

- The University of Kiel, Dept. of Economics, Kiel, Germany during September 16-21, 2001.
- The University of Cologne, Dept. for Theoretical Physics, Cologne, Germany during September 8-15, 2001.

2000

- The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy during August 20-September 01, 2000.

1999

- The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy during August 21-September 10, 1999.

Invited lectures 2017

- Keynote lecture at the 5th Symposium on “Economics, Physics and Finance”, at the CIC A.C., UNAM, Cuernavaca, Mexico, on August 12th, 2017, titled “What does it take to beat the odds? -- Lessons from game theory”.
- Invited lecture at the IER, UNAM, Cuernavaca, Mexico, on August 3rd, 2017, titled “Socio-economic inequalities: Can humans be modeled like atoms?”
- Invited Colloquium at the ICF, UNAM, Cuernavaca, Mexico, on August 2nd, 2017, titled “Socio-economic inequalities: Can humans be modeled like atoms?”
- Invited talk at the Post Graduate School, Department of Physics, University of Guadalajara, Mexico, on July 20th, 2017, titled “Socio-economic inequalities: Can humans be modeled like atoms?”
- Invited lecture at the Conference on “Chaos, scattering, and semi-classics” on July 14th, 2017, titled “Resonance Raman scattering and energy transfer in two dimensional nanosheets”.
- Invited lecture at the “Gathering: Correlations in Time Series and Many-Body Systems” at the CIC A.C., UNAM, Mexico, on July 7th, 2017, titled “Sociophysics: Complex network analyses of languages and ethnic conflicts”.
- Invited lecture at the conference “RMT, Time Series and Many-Body Systems”, at CIC A.C., UNAM, Mexico, on June 29th, 2017, titled “Complex network analysis of co-movements of stock indices”.
- Invited lecture at the IISER, Pune, on June 20th, 2017, titled “Ethnic conflicts and human rights violations: A complex network analysis”.
- Invited lecture at the Chennai Mathematical Institute, Chennai, on June 8th, 2017, titled “Financial fluctuations & economic fundamentals: A network approach”.

2016

- Invited lecture at Institute of Mathematical Sciences, Chennai, on November 26th, 2016, titled “Correlations and co-movements in financial networks: A mesoscopic analysis”.
- Invited lecture at the Indian Statistical Institute, Chennai, on November 23rd, 2016, titled “Mesoscopic networks in socio-economic complex systems”.
- Invited lecture at “Statistical Methods in Finance 2016” at the Chennai Mathematical Institute, Chennai, on November 18th, 2016, titled “Financial time series analyses: Near extreme events, correlations and co-movements”.
- Invited lecture at Chuo University, Tokyo, Japan on November 29th, 2016, titled “Sectoral co-movements in the Indian stock market: A mesoscopic network analysis”.
- Invited lecture at BNERC, Toyo University, Saitama, Japan on November

- 24th, 2016, titled "Bio-nano interactions: A case study of resonance energy transfer from protein molecules to two dimensional nanosheets".
- Invited lecture at Iwate Prefectural University, Takizawa, Japan on November 21st, 2016, titled "Mental Task Classification – Empirical Mode decomposition, Network and Clustering Analyses".
 - Invited lecture at the CentraleSupélec, Paris, France, on July 25th, 2016, titled "Sectoral co-movements and volatilities of Indian stock market: An analysis of daily returns data".
 - Invited lecture at International Conference on "Challenges in Data Science", on July 8th, Matera, Italy, organized by Politecnico di Torino, Italy, titled "Physicists' approach to studying socio-economic inequalities: Data analyses and modeling".
 - Invited lecture at Scuola Normale Superiore, Pisa, Italy on July 6th, 2016, titled "Sectoral co-movements and volatilities of Indian stock market: an analysis of daily returns data".
 - Invited lecture at the International Conference on "Social Statistics in India", at Asian Development Research Institute, Patna on June 24-27, 2016, titled "Physics of Socio-Economic systems: Modelling Inequalities".
 - Invited lecture at Indian Institute of Advanced Study, Shimla on May 25th, 2016, titled "Physicists' approach to studying socio-economic inequalities: Can humans be modelled as atoms?"
 - Invited Lecture at the Conference and 20th Annual Meeting of Japan Association for Evolutionary Economics (JAFEE) at the University of Tokyo, Tokyo, Japan during March 26-27, 2016, titled "Near-extreme events: Density, Copulas..."
 - Invited lecture at the Workshop of Financial and Economic Risk at the International Christian University, Tokyo, Japan, March 25, 2016, titled "Physicists' approach to studying socio-economic inequalities".

2015

- Invited seminar at the RR Bawa DAV College for Girls, Batala on December 22nd, 2015, titled "Integrative Sciences: A Physicist's perspective".
- Invited lectures at "Complex Systems Winter School 2015" held at IISER Mohali, on December 19th, 2015, titled "Econophysics I - Kinetic exchange models in complex socio-economic systems" and "Econophysics II - Statistical mechanics of competitive resource allocation: El Farol Bar to Kolkata Paise Restaurant".
- Invited lecture at the UGC Human Resource Development Center, JNU on August 27th, 2015, titled "Complex Networks".
- Invited lecture at the "Research Workshop and Conference on Statistical methods in finance" at the Chennai Mathematical Institute, Chennai July 17th, 2015, titled "Econophysics".

- Invited lecture at the National Institute of Chemical Physics and Biophysics, Tallinn, Estonia on June 25th, 2015, titled "Opinion formation in the society using the kinetic exchange models".
- Invited lectures at "Econophysics and Quantitative Finance workshop" at Indian Institute of Management, Indore on April 10th, 2015, titled "A Physicist's way of doing Computational Finance" and "Statistical mechanics of competitive resource allocation: El Farol Bar to Kolkata Paise Restaurant".
- Invited lecture at the Department of Physics, Maharaja Agrasen University, Solan, India, on February 9th, 2015, titled "Do human beings behave like atoms?"
- Invited lecture at the 102nd Indian Science Congress, held at the University of Mumbai, Mumbai, India, on January 5th, 2015, at the session "Application of Mathematical Modeling to Societal Issues", titled "Opinion formation in society using the kinetic exchange models"

2014

- Invited lecture at TCS Innovation Labs, New Delhi, on December 10th, 2014, titled "Can we model human beings?"
- Invited lecture at Department of Physics, University of Calcutta, Kolkata, on December 8th, 2014, titled "Statistical mechanics of competitive resource allocation: El Farol Bar to Kolkata Paise Restaurant".
- Invited lectures at the UGC Academic Staff College, Jawaharlal Nehru University, New Delhi, on October 8-9, 2014, titled "Econophysics & Sociophysics".
- Invited lecture at the UGC Academic Staff College, Jawaharlal Nehru University, New Delhi, on August 13th, 2014, titled "Computational Finance".

2013

- Invited talk at the International Workshop on Nonlinear Maps and their Applications NOMA-2013, on September 4th, 2013 in Zaragoza, Spain, titled "Kinetic exchange models in economics and sociology".
- Invited seminar at the Graduate School of Information Science & Technology, Hokkaido University, Sapporo, Japan on August 28th, 2013, titled "An Econophysicist's way of studying the dynamic evolution of the market."
- Invited seminar at the Department of Computer Science, National Defense Academy, Yokosuka, Japan on August 22nd, 2013, titled "An Econophysicist's way of studying the dynamic evolution of the market."
- Invited seminar at the Department of Software & Information Science, Iwate Prefectural University, Morioka, Japan, on August 9th, 2013, titled "An

Econophysicist's way of studying the dynamic evolution of the market."

- Invited talk at the ELC International Meeting on "Inference, Computation, and Spin Glasses" (ICSG2013), Sapporo, Japan, on July 28th, 2013, titled "Statistical inference of co-movements of stocks during a financial crisis."
- Invited seminar at the Social Science Research Institute, International Christian University, Tokyo, Japan, on July 22nd, 2013, titled "Analyses of near-extreme events and recurrences in financial time series."
- Invited seminar at the Bayesian & Interdisciplinary Research Unit, Indian Statistical Institute, India, on January 18th, 2013, titled "Time-series analyses by Econophysicists."
- Invited seminar jointly organized by the School of Computational and Integrative Sciences & School of Computer and System Sciences, Jawaharlal Nehru University, New Delhi, on January 11th, 2013, titled "Visualization tools in Financial Markets."
- Invited seminar at the School of Computational and Integrative Sciences, Jawaharlal Nehru University, New Delhi, on January 10th, 2013, titled "Multi-agent modelling of Complex Systems."
- Invited seminar at the School of Computational and Integrative Sciences, Jawaharlal Nehru University, New Delhi, on January 9th, 2013, titled "Kinetic exchange models in complex socio-economic systems."

2012

- Invited seminar at the School of Computer and System Sciences, Jawaharlal Nehru University, New Delhi, on November 21st, 2012, titled "Trends, Patterns and Co-movement in financial markets."
- Invited lecture at the international meeting "Exploring an Interface Between Economics & Physics", held at the Department of Physics and Astrophysics, University of Delhi, New Delhi, on November 6-7, 2012, titled "Trends, Patterns and Co-movement in financial markets."
- Invited Lectures at the Department of Physics Galileo Galilei, University of Padova, Italy, on June 27th and June 29th, 2012, titled "Multi-agent modeling of financial markets – Part 1 and 2"
- Invited Lecture at the Department of Physics Galileo Galilei, University of Padova, Italy, on March 1st, 2012, titled "Can we model socio-economic phenomena using kinetic theory of gases?"
- Invited Lecture at the Statistical Physics Group, University of Calcutta, Kolkata, India, on January 5th, 2012, titled "Kinetic exchange models in studying socio-economic phenomena".
- Invited lecture at the International Conference "Contemporary Issues and Applications of Statistics" on January 4th, 2012 at the Indian Statistical Institute, Kolkata, India, titled "Correlations in Financial Time-series: An Econophysicist's Perspective".

2011

- Invited lecture at the Theoretical Condensed Matter Physics Division, Saha Institute of Nuclear Physics, Kolkata, India, on December 30th, 2011, titled "Kinetic exchange formalism applied to socio-economic phenomena".
- Invited lecture at the Department of Physics and Astrophysics, University of Delhi, India, on December 22nd, 2011, titled "Kinetic exchange models in studying socio-economic phenomena".
- Invited lecture at the Centre d'analyse et de mathématique sociales, Ecole des Hautes Etudes en Sciences Sociales, Paris, France on December 9th, 2011, titled "Kinetic exchange models in studying socio-economic phenomena".
- Invited lecture at the Unexpected Conference on "SOCIOPHYSICS: Do humans behave like atoms?" held at CREA, École Nationale Supérieure de Techniques Avancées, Paris, France on November 15th, 2011, titled "Opinion formation in the kinetic exchange models".
- Invited lecture at International Workshop on "Econophysics of systemic risk and network dynamics", held at Saha Institute of Nuclear Physics, Kolkata, India on October 25th, 2011, titled "Correlations in financial time series".
- Invited lecture at School and Workshop on Market Microstructure: Design, Efficiency and Statistical Regularities, ICTP, Italy on March 21st, 2011, titled "Statistical physics inspired models of financial markets".
- Invited talk at Graduate School of Information Science & Technology, Hokkaido University, Japan on March 1st, 2011, titled "Opinion formation in the kinetic exchange models".
- Invited talk at Department of Physics, Kyoto University, Japan on February 24th, 2011, titled "Opinion formation in the kinetic exchange models".
- Invited lecture at First Workshop on Quantitative Finance and Economic: an Unconventional Meeting, International Christian University of Tokyo, Japan on February 21st, 2011, titled "Kinetic exchange models of wealth distribution".
- Invited lecture at XII Workshop on Quantitative Finance, University of Padova, Italy on January 27th, 2011, titled "The near-extreme density of intraday log returns".

2010

- Invited Seminar at Statistical Physics Group, Theoretical Condensed Matter Physics Division, Saha Institute of Nuclear Physics, India on November 22nd, 2010, titled "Kinetic Exchange Models of Socio-Economic problems".

2009

- Invited Seminar at Laboratoire de Mathématiques Appliquées aux Systèmes, Ecole Centrale Paris, France on February 19th, 2009, titled

"Unconventional Application of Statistical Physics: Econophysics".

2008

- Invited Seminar on "An Outlook on Econophysics" at Laboratoire de Mathématiques Appliquées aux Systèmes, Ecole Centrale de Paris, France on May 23rd, 2008.
- Invited colloquium at School of Physical Sciences, Jawaharlal Nehru University, New Delhi, India on May 7th, 2008 titled "An Outlook on Econophysics".
- Invited Special Random Interactions Seminar on "Multi-agent Modelling of Complex Systems" at Department of Theoretical Physics, Tata Institute of Fundamental Research, India on March 7th, 2008.
- Invited Special Theoretical Physics Colloquium on "An Outlook on Econophysics" at Department of Theoretical Physics, Tata Institute of Fundamental Research, India on March 6th, 2008.
- International Workshop and Conference on "Statistical Physics Approaches to Multidisciplinary Problems" held at Indian Institute of Technology, Guwahati during January 7-13, 2008. Invited talk titled "Methods in Econophysics: Successes and Failures".
- Invited Seminar on "What is Econophysics?" at Department of Economics, Banaras Hindu University, Varanasi on January 4th, 2008.

2006

- Invited Lecture on "Physics of DNA Regulatory Networks" at "Physics Learning Camp" held at Department of Physics, Banaras Hindu University, Varanasi on October 18th, 2006.
- Invited Indian Physics Association colloquium at Department of Physics, Banaras Hindu University, Varanasi on August 18th, 2006, titled "Unconventional Applications of Statistical Physics".
- Invited lectures/tutorials at the SERC School on "Statistical Physics and Structural Phase Transitions" held at the Department of Material Sciences, Institute of Technology, Banaras Hindu University, Varanasi during March 1-7, 2006.
- International Workshop on "Econophysics of Stock Markets and Minority Games", held at Saha Institute of Nuclear Physics, Kolkata on February 14-17, 2006. Invited talk on "Studies on correlations in stock prices and adaptive minority games".

2005

- Invited Colloquium at the Mahila Maha Vidyalaya, Banaras Hindu University, Varanasi on November 29th, 2005 titled "Econophysics: Analyses & Modeling".

- Invited Seminar at the Institute for Physical Science and Technology, University of Maryland, Maryland on May 3rd, 2005 titled “Econophysics: Analyses & Modelling”.
- Informal Seminar at the Bussemaker Laboratory, Department of Biological Sciences, Columbia University, New York on April 13th, 2005 titled “What is Econophysics?”
- International Workshop on “Econophysics of Wealth Distributions”, held at Saha Institute of Nuclear Physics, Kolkata on March 15-19, 2005. Invited talk on “A Physicist’s attempt to model wealth distributions in Economic systems”.
- Invited lectures at Physics Department, Bose Institute, Kolkata, India on March 11th, 2005 titled “What is Econophysics? Part I and II”.
- Invited Colloquium at Physical Research Lab., Ahmedabad, India on March 9th, 2005 titled “Correlations and other studies in Financial Time Series”.
- Invited talk at Physics Department, Delhi University, New Delhi, India on March 3rd, 2005 titled “Model to study Adaptation in Multi-Agent Systems”.
- Invited talk at School of Physical Sciences, Jawaharlal Nehru University, New Delhi, India on March 2nd, 2005 titled “Correlations and other studies in Financial Time Series”.

2004

- Invited talk at the second mini-symposium of the EXYSTENCE Thematic Institute “From Many-Particle Physics to Multi-Agent Systems” held at the Max Planck Institute for the Physics of Complex Systems (MPIPKS) in Dresden, Germany on August 23rd, 2004, titled “Adaptive Minority Games”.
- Invited talk at the Lab. of Computational Engineering, Helsinki University of Technology, Helsinki, Finland on July 21st, 2004, titled “Genome-wide identification of transcription factor binding sites: A Physicist’s Viewpoint”.

2003

- International Conference on “Unconventional Applications of Statistical Physics” held at Saha Institute of Nuclear Physics, Kolkata on March 20-22, 2003. Invited talk on “Biology helps you to win a game”.
- Invited talk at the Biophysics and Statistical Mechanics Group, Laboratory of Computational Engineering, Helsinki University of Technology, Helsinki, Finland on February 26th, 2003, titled “An Introduction to the Travelling Salesman Problem”.

2001

- Invited talk–“Erich Schneider Seminar” at Dept. of Economics, University of Kiel, Kiel, Germany, on September 18th, 2001 titled “The Distribution Functions of Money and Commodity Holdings in a Minimal Model of a

Market Economy”.

2000

- Invited talk at One-day seminar “Recent Trends in Condensed Matter Physics”, held at Visva-Bharati University, Santiniketan, India on December 17th, 2000, titled “Application of Statistical Physics to Economics: An Introduction”.

Conferences Workshops

- International conference "StatPhys26", July 18-22, Lyon, France, by the IUPAP-International Union of Pure and Applied Physics.
 - Poster presentation on "Statistical physics models of Language Dynamics: Role of Diversity"
- Indo-US Bilateral Conference cum Workshop on "Big Data Analysis and Translation in Disease Biology" at Jawaharlal Nehru University, New Delhi, India, during January 18-22 2015.
 - Session Chairperson on January 20th, 15h00-19h00.
- International Conference "STATPHYS-KOLKATA VIII", held at Satyendra Nath Bose National Centre for Basic Sciences, Kolkata, India during December 1-5, 2014.
- International Workshop on "Econophysics and data driven modelling of market dynamics", held at Saha Institute of Nuclear Physics, Kolkata, India during March 14-17, 2014.
- International Workshop on Nonlinear Maps and their Applications NOMA-2013, on September 3-4, 2013 in Zaragoza, Spain.
 - Session Chairperson on September 4th, 15h30-17h10.
- International Workshop on "Statistical modeling, financial data analysis and applications", held at the Istituto Veneto di Scienze Lettere ed Arti (IVSLA) in Venice, during September 11-14, 2013.
- The International Conference "FNET 2013 Kyoto: Financial Networks and Systemic Risk", held at Kyoto University, Kyoto, Japan during July 17-19, 2013.
 - Session Chairperson on July 19th, 09h30-11h40.
 - Oral presentation on "Visualization and analyses of co-movement of stocks during a financial crisis".
- International Workshop & Conference on "Diversity & Complexity: Realm of today's Statistical Physics", held at Saha Institute of Nuclear Physics, Kolkata, India during January 14-17, 2013.
- International Workshop on "Econophysics of Agent-based models", held at Saha Institute of Nuclear Physics, Kolkata, India during November 8-12, 2012.
- The International Conference "Contemporary Issues and Applications of Statistics" held at the Indian Statistical Institute, Kolkata, India, during January 2-4, 2012.
- The Unexpected Conference on "SOCIOPHYSICS: Do humans behave like atoms?" held at CREA, École Nationale Supérieure de Techniques Avancées, Paris, France during November 14-16, 2011.
- International Workshop on "Econophysics of systemic risk and network dynamics", held at Saha Institute of Nuclear Physics, Kolkata, India during October 21-25, 2011.
- School and Workshop on "Market Microstructure: Design, Efficiency and Statistical Regularities", held at the Abdus Salam ICTP, Trieste, Italy during

March 21-25, 2011.

- First Workshop on “Quantitative Finance and Economic: an Unconventional Meeting”, held at the International Christian University of Tokyo, Japan during February 21-23, 2011.
- The XII Workshop on Quantitative Finance, held at the University of Padova, Italy during January 27-28, 2011.
- International Conference on “Market Microstructure: confronting many viewpoints” held at the Institut Louis Bachelier, Paris, France during December 6-10, 2010.
- International Workshop on “Statistical Physics of Complexity, Optimization and Biological information” held at Université Paris-Sud 11, Orsay, France during September 13-15, 2010.
- International Workshop and Conference on “Statistical Physics Approaches to Multidisciplinary Problems” held at Indian Institute of Technology, Guwahati, India during January 7-13, 2008.
 - Poster presentation on “Interstate Pattern of Technology Achievement in India”.
- International conference on “Recent Advances in the Interdisciplinary Applications of Statistical Physics” at Interdisciplinary Center of Theoretical Studies (ICTS), Chinese Academy of Sciences (CAS), Beijing, China on August 21st, 2006.
 - Oral presentation on “Genome-wide identification of transcription factor binding sites: A Physicist’s Viewpoint”.
 - Poster presentation on “Generalized statistical models of economy markets”.
- International Conference entitled “93rd Statistical Mechanics Conference” held at Rutgers University, New Jersey on May 15-17, 2005.
 - Oral presentation on “Statistical Mechanics of Money Savings”.
- March Meeting of the American Physical Society, held at Los Angeles, California, during March 21-25, 2005.
 - Oral presentation on “Statistical model with a standard Gamma distribution”.
- One-day Special Plenary Session of the Conference in Computational Physics (CCP2005), held at Los Angeles, California on March 20th, 2005.
- Workshop “Multi-Agent Systems - Swarms, Ecology, and Society”, held at the Max Planck Institute for the Physics of Complex Systems (MPIPKS) in Dresden, Germany during August 30-September 3, 2004.
- Workshop entitled “BioMaPS/DIMACS/MBBC/PMMB Short Course: Transcriptional Regulation from Molecules to Systems and Beyond” held at the DIMACS Center - Rutgers University, New Jersey on June 21-25, 2004.
- International Conference entitled “91st Statistical Mechanics Conference” held at Rutgers University, New Jersey on May 16-18, 2004. Oral presentation on “Statistical Mechanics of Multiple Local Sequence

- Alignment”.
- International Workshop entitled “Workshop on Economics with Heterogeneous Interacting agents 2003” held at the Institute for World Economics, Kiel on May 29-31, 2003.
 - Oral presentation on “Adaptation amongst Heterogeneous Interacting Agents in a model Economy”.
 - Santa Fe Institute-Saha Institute of Nuclear Physics Joint Workshop on “Dynamical and Spatially Extended Systems” held at Saha Institute of Nuclear Physics, Kolkata on January 21-23, 2002.
 - Poster presentation on “Market application of percolation theory”.
 - International Conference STATPHYS-KOLKATA IV, held at the Indian Association for the Cultivation of Science and S. N. Bose National Centre for Basic Sciences, Kolkata during January 14-19, 2002.
 - Poster presentation on “Distribution Functions of Money in Model Market of Economy”.
 - International Conference “Conference on Computational Physics (CCP 2001)”, held at Aachen, Germany during September 5-8, 2001.
 - Oral presentation entitled “Study of the distribution functions in minimal model market”.
 - Workshop on “Probability and Statistical Physics”, held at S. N. Bose National Centre for Basic Sciences during February 19-23, 2001.
 - Poster presentation entitled “Study of the distribution functions in the minimal model market”.
 - International Summer School and Workshop on “Second School on the Mathematics of Economics”, held at the Abdus Salam International Centre for Theoretical Physics, Trieste, Italy from August 21-September 1, 2000.
 - Oral presentation entitled “The Statistical Mechanics of Money”.
 - SERC School on “Field Theory in Condensed Matter Systems”, held at the Mehta Research Institute, Allahabad, India from February 13-March 4, 2000.
 - International Conference on “NP-hardness and Phase transitions”, held at the Abdus Salam International Centre for Theoretical Physics, Trieste, Italy from September 6-10, 1999.
 - Poster presentation entitled “The Travelling Salesman Problem on Manhattan Metric- A Physicist’s Approach”.
 - International Summer School on “Statistical Physics and Probabilistic Methods in Computer Science: A Primer for Physicists, Mathematicians & Computer Scientists”, held at the Abdus Salam International Centre for Theoretical Physics, Trieste, Italy from August 23-September 3, 1999.

Supervision Present

- Supervising Dr. Amrita Singh as CSIR-Research Associate at School of Computational and Integrative Sciences, Jawaharlal Nehru University.
- Supervising Dr. Akshansh Gupta as DST-Research Associate at School of Computational and Integrative Sciences, Jawaharlal Nehru University.
- Supervising Kiran Sharma for Ph.D. at School of Computational and Integrative Sciences, Jawaharlal Nehru University.
- Supervising Syed Shariq Husain for Ph.D. at School of Computational and Integrative Sciences, Jawaharlal Nehru University.
- Supervising Vishwas Kukreti for Ph.D. at School of Computational and Integrative Sciences, Jawaharlal Nehru University.
- Supervising Praveen Mishra for Ph.D. at School of Computational and Integrative Sciences, Jawaharlal Nehru University.

Past, in France

- Co-supervised Rémy Chicheportiche (with Frédéric Abergel) for Ph.D. (thesis defended on June 27, 2013).
 - Ph.D. thesis entitled "Non-linear Dependences in Finance".
- Co-supervised Federico Bettin (with Damien Challet and Attilio Stella) for Masters internship (March 1, 2013- August 31, 2013).
- Supervised the apprenticeship of Gayatri Tilak (Université Paris-Dauphine, France) for Master's degree (September 5, 2011-October 10, 2012).
 - Master's thesis entitled "Analysis Studies of the Recurrence-time interval distribution in financial time-series data at low and high frequencies".
- Supervised Esteban Guevara Hidalgo (École Polytechnique, France) for Masters internship (January 16, 2012- June 30, 2012).
 - Master's thesis entitled " Statistical analysis of high frequency financial time series: individual and collective stock dynamics".
- Supervised Saumya Deojain (University of Delhi, India) for Masters internship (May 16, 2011- July 31, 2011).
- Supervised Gayatri Tilak (École Centrale d'électronique, France) for Masters internship (February 1, 2011- July 31, 2011).
 - Master's thesis entitled "Analysis of financial time series: moving averages and correlations".
- Supervised Mehdi Lallouache (Ecole normale supérieure de Cachan, France) for internship (September 2010-February 2011).
- Co-supervised Hazem Krichéne (Ecole polytechnique de Tunisie, Tunisia) for Masters internship with Frédéric Abergel (February 2010-June 2010).
 - Master's thesis entitled "L'application de la théorie des réseaux pour l'étude du risque systémique".
- Supervised Mehdi Lallouache (Ecole normale supérieure de Cachan,

France) for Masters internship (January 2010- June 2010).

- Master's thesis entitled "Kinetic Wealth Exchange Models: Some Analytical Aspects".

Past, in India

- Supervised Dr. Arun Singh Patel as Research Associate (August 1, 2015 – May 26, 2017) at School of Computational and Integrative Sciences, Jawaharlal Nehru University, New Delhi.
- Supervised M. Tech. Thesis of Praveen Mishra entitled "Nano-bio interaction: A case study of protein molecules with gold nanoparticles and two dimensional nanosheets" at School of Computational and Integrative Sciences, Jawaharlal Nehru University, New Delhi (2016).
- Supervised M. Tech. Thesis of Anuj Kumar Sirohi entitled "Effect of noise on Spatio-temporal pattern formation for Interacting Population Models" at School of Computational and Integrative Sciences, Jawaharlal Nehru University, New Delhi (2015).
- Supervised M.Sc. Thesis of Mr. V. Sreeramulu entitled "Statistical Methods of event generation studies" at Department of Physics, Banaras Hindu University, Varanasi (2008).
- Supervised M.Sc. Thesis of Mr. Manoj Kumar entitled "DNA Transcription Regulation: A Network Study" at Department of Physics, Banaras Hindu University, Varanasi (2007).
- Co-supervised (with K. Kaski) M. Sc. Thesis of Mr. J.-P. Onnela entitled "Taxonomy of Financial Assets" at Laboratory of Computational Engineering, Helsinki University of Technology, Finland, leading to publication in peer-reviewed journal (2002).

Teaching Present

- Teaching Statistical Mechanics of Complex Systems and Multi-agent modeling of complex systems for Integrated M.Sc.-Ph.D. programme at School of Computational and Integrative Sciences, Jawaharlal Nehru University.
- Teaching Classical and Quantum Mechanics for Integrated M.Sc.-Ph.D. programme at School of Computational and Integrative Sciences, Jawaharlal Nehru University.

Past, in France

- Professor-in-charge and Tutor 2013-2014 Masters M2 Elective Course PH2821 «Applications of statistical physics to socio-economical complex systems» at Ecole Centrale Paris, France, in the S8 semester (36 hours).
- Professor-in-charge and Tutor 2012-2013 Masters M2 course «MA2821 Modélisation multi-agents des systèmes complexes» at Ecole Centrale Paris, France, in the S8 semester (36 hours).
- Co-tutor 2012-2013 Masters M3 course «MA3216 Physique des marchés» at Ecole Centrale Paris, France.
- Professor-in-charge and Tutor 2011-2012 Masters degree elective course «Modélisation multi-agents des systèmes complexes» at Ecole Centrale Paris, France, in the S8 semester (36 hours).
- Professor-in-charge and Tutor 2010-2011 Masters degree elective course «Modélisation multi-agents des systèmes complexes» at Ecole Centrale Paris, France, in the S8 semester (36 hours).
- Professor-in-charge and Tutor 2009-2010 Masters degree elective course «Modélisation multi-agents des systèmes complexes» at Ecole Centrale Paris, France, in the winter S4 semester (36 hours).

Past, in India

- Taught Research Methodology for M.Tech.-Ph.D. students at School of Computational and Integrative Sciences, Jawaharlal Nehru University (2014-2016).
- Taught Quantitative Methods for Pre-Ph.D. course at School of Computational and Integrative Sciences, Jawaharlal Nehru University (2014-2015).
- Taught Physics at Banaras Hindu University, Varanasi, India (November, 2005-September, 2008 @ 20 hours/week and 640+ hours/year).
 - Subjects at Undergraduate level: Statistical Physics, Nuclear and Particle Physics, Electronics (Laboratory).
 - Subjects at Postgraduate level: Advanced Statistical Physics, Quantum Mechanics, Molecular Biophysics, Computational Physics

(Laboratory).

- Taught Programming in C as Guest-lecturer, Department of Computer Science, Mahila Mahavidyalaya, Banaras Hindu University (July-October, 2007 @ 3 hours/week).
- Statistical Physics Tutorial Classes, Post M. Sc. Course, First semester, at Saha Institute of Nuclear Physics, Kolkata, India.

Professional Accomplishments

Administration

- **Dean**, School of Computational and Integrative Sciences, Jawaharlal Nehru University (December 15, 2014—December 14, 2016).
- **Coordinator**, Mathematical & Computational Empowerment Cell, Jawaharlal Nehru University (September 2014 – till date).
- **Coordinator**, Department of Biotechnology Centre of Excellence (Funded by Department of Biotechnology, Ministry of Science and Technology, Government of India) (2015-2016).
- **Member, Executive Council**, Jawaharlal Nehru University (2015-2016).
- **Member, Academic Council**, Jawaharlal Nehru University (2015-2016)

Editorial and Reviewing

- **Editorial Board member** for the Series "*Physics of Society: Econophysics and Sociophysics*," Cambridge University Press.
- **Editorial Board member** for the journal *Complexity Economics* (Baltzer Science Publishers, Amsterdam & Berlin).
- **Reviewer** of papers submitted to journals:
 - *Physical Review Letters*;
 - *Nature – Scientific Reports*;
 - *Physical Review E*;
 - *European Physical Journal B*;
 - *Management Science*;
 - *Physica A*;
 - *Journal of Economic Behavior & Organization*;
 - *Communications in Mathematical Sciences*;
 - *Journal of Statistical Mechanics: Theory and Experiment*;
 - *Fractals*;
 - *New Journal of Physics*;
 - *PLOS ONE*;
 - *Economics e-journal*;
 - *Indian Journal of Physics*;
 - *Quantitative Finance*;
 - *Transactions on Modeling and Computer Simulation*;
 - *Journal of Physics A: Mathematical and Theoretical*;
 - *Entropy*;
 - *Journal of Physics: Conference Series*;
 - *Applied Mathematics and Computation*;
 - *Journal of Econometrics*;
 - *Intelligent Systems in Accounting*;
 - *Finance and Management*;
 - *International Journal of Computational Economics and Econometrics*;
 - *Pramana - Journal of Physics*;

- *Nonlinear Maps and their Applications (Springer Proceedings in Mathematics & Statistics);*
- *Chaos, Solitons & Fractals;*
- *Market Microstructure and Liquidity;*
- *Dynamic Games and Applications.*

Organization of conferences, symposia, meetings, etc.

- **Convenor**, International Workshop on “Econophys-2017 & Asia Pacific Econophysics Conference (APEC)-2017” at Jawaharlal Nehru University and Delhi University, New Delhi, to be held during November 15-18, 2017.
- **Organizer**, Symposium on “Applications of Pattern Recognition & Machine Learning in Medical Science”, at School of Computational and Integrative Sciences, JNU, New Delhi, on September 18, 2017.
- **Convenor**, Symposium on “New Trends in Applied Mathematics: From Biology to Finance”, at School of Computational and Integrative Sciences, JNU, New Delhi, on September 11, 2017.
- **Organizer**, “5th symposium: Economics, physics and finance”, at CIC A.C., Cuernavaca, Mexico, during August 11-12, 2017.
- Member, Organizing Committee, Statphys-Kolkata IX, held at Kolkata on December 13-16, 2016.
- **Convenor**, International Conference/workshop on “Nano-BioInterface – 2016” at Jawaharlal Nehru University, New Delhi during March 18-20, 2016.
- **Convenor**, International Workshop on “Econophysics & Sociophysics” at Jawaharlal Nehru University and Delhi University, New Delhi during November 27-December 1, 2015.
- **Convenor and organizer**, Symposium on “Recent Trends in Mathematical Biology”, at School of Computational and Integrative Sciences, JNU, New Delhi, on April 16, 2015.
- **Convenor and organizer**, Mini Symposium on Complex Systems, at School of Computational and Integrative Sciences, JNU, New Delhi, on February 2, 2015.
- **Convenor**, Organizing Committee, Statphys-Kolkata VIII, held at Kolkata on December 1-5, 2014.
- **Convenor**, Organizing Committee, Econophys-Kolkata VIII, held at Kolkata on March 14-17, 2014.
- Member, Organizing Committee, International Workshop on “Statistical modeling, financial data analysis and applications”, held at the Istituto Veneto di Scienze Lettere ed Arti (IVSLA) in Venice, on 11-14 September 2013.
- Member, Organizing Committee, International workshop & conference

“Diversity & Complexity: Realm of today’s Statistical Physics”, held at Kolkata on January 14-17, 2013.

- **Convenor**, Organizing Committee, Econophys-Kolkata VII, held at Kolkata on November 8-12, 2012.
- **Director**, Organizing Committee, School and Workshop on Market Microstructure: Design, Efficiency and Statistical Regularities, held at Abdus Salam ICTP, Trieste on March 21-25, 2011.
- **Convenor**, Organizing Committee, Econophys-Kolkata VI, held at Kolkata on October 21-25, 2011.
- **Convenor**, Organizing Committee, Econophys-Kolkata V held at Kolkata on March 9-13, 2010.
- Member, Organizing Committee, Preparatory SERC School in Theoretical High Energy Physics held at Department of Physics, Banaras Hindu University, Varanasi, India during November 26- December 15, 2007.
- Member, Career Counselling Camp held at Central Hindu School for Boys, Varanasi, organized by Rotary Club (North Chapter), Varanasi on November 16, 2007.
- Member, Organizing Committee, “Physics Learning Camp” held at Department of Physics, Banaras Hindu University, Varanasi, India during October 13-18, 2006.
- Member of the Advisory Committee for the International Conference “Unconventional Applications of Statistical Physics”, Kolkata, 2003.

Thesis examiner, jury member, membership of bodies, etc.

- Examiner, Santhust, Department of Physics and Astrophysics, University of Delhi, New Delhi, 2017
- Examiner, Shikha Dwivedi, Indian School of Mines, Dhanbad, 2017
- Examiner, Sanat Kumar, Indian School of Mines, Dhanbad, 2016
- Examiner, Marouane Anane, École Centrale Paris, 2015
- Examiner, Santanu Mandal, Jadavpur University, Kolkata, 2015
- Examiner, Ajanta Kundu, University of Calcutta, 2015
- Examiner, Manjori Mukherjee, Indian School of Mines, Dhanbad, 2014
- Examiner, Soumyajyoti Biswas, University of Calcutta, 2014
- Member of the jury, Ph. D. defense committee at Laboratoire MAS, Ecole Centrale Paris, France on June 27, 2013, for Rémy Chicheportiche.
- Member of the jury, Ph. D. defense committee at Laboratoire MAS, Ecole Centrale Paris, France on December 14, 2012, for Nicolas Huth.
- Member of the jury, Ph. D. defense committee at Department of Physics Galileo Galilei, University of Padova, Italy in February, 2012, for:
 - Alessandra Cagnazzo, Francesco Camana, Francesca Catino and Alessandra Gnechi.
- Member of the American Physical Society, 2004-2006.

Publications Books and Edited Volumes

1. "Econophysics and Sociophysics: Recent Progress and Future Directions", Eds. F. Abergel, H. Aoyama, B.K. Chakrabarti, A. Chakraborti, N. Deo, D. Raina and I. Vodenska (Springer, Cham, 2017).
2. "Limit Order Books", F. Abergel, A. Chakraborti, A. Jedidi, I. Muni Toke, and M. Anane (Cambridge University Press, 2016).
3. "Proceedings of the STATPHYS-KOLKATA VIII", Eds. A Chakraborti, S Chatterjee and P Pradhan, Journal of Physics: Conference Series 638 (2015).
4. "Preface: STATPHYS-KOLKATA VIII", A Chakraborti, S Chatterjee and P Pradhan, Journal of Physics: Conference Series 638, 011001 (2015).
5. "Econophysics and Data Driven Modelling of Market Dynamics", Eds. F. Abergel, H. Aoyama, B.K. Chakrabarti, A. Chakraborti and A. Ghosh, (Springer, Milan, 2015).
6. "Econophysics of Agent-based models", Eds. F. Abergel, H. Aoyama, B.K. Chakrabarti, A. Chakraborti and A. Ghosh (Springer-Verlag (Italia), Milan, 2013).
7. "Econophysics of Income and Wealth Distributions", B.K. Chakrabarti, A. Chakraborti, S.R. Chakravarty and A. Chatterjee (Cambridge University Press, Cambridge, 2013).
8. "Econophysics of systemic risk and network dynamics", Eds. F. Abergel, B.K. Chakrabarti, A. Chakraborti and A. Ghosh (Springer-Verlag (Italia), Milan, 2012).
9. "Econophysics of order-driven markets", Eds. F. Abergel, B.K. Chakrabarti, A. Chakraborti and M. Mitra (Springer-Verlag (Italia), Milan, 2011).
10. "Fifteen Years of Econophysics Research", a special issue in Science and Culture (Kolkata, India), Guest Eds. B.K. Chakrabarti and A. Chakraborti, Volume 76 (9-10) (2010).
11. "Econophysics: An Introduction", S. Sinha, A. Chatterjee, A. Chakraborti and B.K. Chakrabarti (Wiley-VCH, Berlin, 2010).
12. "Econophysics and Sociophysics: Trends and Perspectives", Eds. B.K. Chakrabarti, A. Chakraborti and A. Chatterjee (Wiley-VCH, Berlin, 2006).

Book Chapters

13. "Sectoral Co-movements in the Indian Stock Market: A Mesoscopic Network Analysis", K. Sharma, S. Shah, A.S. Chakrabarti and A. Chakraborti, in Eds. Y. Aruka and A. Kirman, *Economic Foundations for Social Complexity Science: Theory, Sentiments, and Empirical Laws* (Springer, Singapore, 2017).
14. "Reaction-Diffusion Equations with Applications to Economic Systems", S. Ganguly, U. Neogi, A.S. Chakrabarti and A. Chakraborti, in Eds. F. Abergel, H. Aoyama, B.K. Chakrabarti, A. Chakraborti, N. Deo, D. Raina and I.

- Vodenska, *Econophysics and Sociophysics: Recent Progress and Future Directions* (Springer, Cham, 2017), pp 131-144.
15. "Kinetic Exchange Models as D Dimensional Systems: A Comparison of Different Approaches", M. Patriarca, E. Heinsalu, A. Singh and A. Chakraborti, in Eds. F. Abergel, H. Aoyama, B.K. Chakrabarti, A. Chakraborti, N. Deo, D. Raina and I. Vodenska, *Econophysics and Sociophysics: Recent Progress and Future Directions* (Springer, Cham, 2017), 147-158.
 16. "The Microscopic Origin of the Pareto Law and Other Power-Law Distributions", M. Patriarca, E. Heinsalu, A. Chakraborti and K. Kaski, in Eds. F. Abergel, H. Aoyama, B.K. Chakrabarti, A. Chakraborti, N. Deo, D. Raina and I. Vodenska, *Econophysics and Sociophysics: Recent Progress and Future Directions* (Springer, Cham, 2017), pp 159-176.
 17. "Patterns of Linguistic Diffusion in Space and Time: The Case of Mazatec", J.L. Léonard, E. Heinsalu, M. Patriarca, K. Sharma and A. Chakraborti, in Eds. F. Abergel, H. Aoyama, B.K. Chakrabarti, A. Chakraborti, N. Deo, D. Raina and I. Vodenska, *Econophysics and Sociophysics: Recent Progress and Future Directions* (Springer, Cham, 2017), pp 227-251.
 18. "Epilogue", D. Raina and A. Chakraborti, in Eds. F. Abergel, H. Aoyama, B.K. Chakrabarti, A. Chakraborti, N. Deo, D. Raina and I. Vodenska, *Econophysics and Sociophysics: Recent Progress and Future Directions* (Springer, Cham, 2017), pp 255-256.
 19. "Power-Laws as Statistical Mixtures", M. Patriarca, E. Heinsalu, L. Marzola, A. Chakraborti and K. Kaski, in Eds. Stefano Battiston, Francesco De Pellegrini, Guido Caldarelli, Emanuela Merelli, Proceedings of European Conference on Complex Systems (ECCS-2014) (2016), pp 271-282.
 20. "Group-Based Pricing to Shape Demand in Real-Time Electricity Markets", R. Agrawal, A. Chakraborti, K. Singh, G. Shroff, V. Sarangan, Multi-Agent Systems and Agreement Technologies, Lecture Notes in Computer Science book series, volume 9571 (2016), pp 121-128.
 21. "Physicists' Approaches to a Few Economic Problems", A. Chakraborti, Y. Fujiwara, A. Ghosh, J. Inoue and S. Sinha, in Eds. F. Abergel, H. Aoyama, B. K. Chakrabarti, A. Chakraborti and A. Ghosh, *Econophysics and Data Driven Modelling of Market Dynamics* (Springer, Milan, 2015), pp. 237-286.
 22. "Maximizing a Psychological Uplift in Love Dynamics", M. Banerjee, A. Chakraborti and J. Inoue, in Eds. R. Lopez-Ruiz, D. Fournier-Prunaret, Y. Nishio, C. Gracio, *Nonlinear Maps and their Applications*, Springer Proceedings in Mathematics & Statistics (Springer International Publishing, Switzerland, 2015), pp 241-252.
 23. "Kinetic Exchange Models in Economics and Sociology", S. Goswami and A. Chakraborti, in Eds. R. Lopez-Ruiz, D. Fournier-Prunaret, Y. Nishio, C. Gracio, *Nonlinear Maps and their Applications*, Springer Proceedings in Mathematics & Statistics (Springer International Publishing, Switzerland,

- 2015), pp 69-88.
24. "Themes and applications of kinetic exchange models: Redux", A. Ghosh, A.S. Chakrabarti, A.K. Chandra and A. Chakraborti, in Eds. F. Abergel, H. Aoyama, B. K. Chakrabarti, A. Chakraborti and A. Ghosh, *Econophysics of Agent-based models* (Springer-Verlag (Italia), Milan, 2013).
 25. "Study of statistical correlations in intraday and daily financial return time series", G. Tilak, T. Szell, R. Chicheportiche and A. Chakraborti in Eds. F. Abergel, B. K. Chakrabarti, A. Chakraborti and A. Ghosh, *Econophysics of systemic risk and network dynamics* (Springer-Verlag (Italia), Milan, 2012).
 26. "Opinion formation in the kinetic exchange models", Anirban Chakraborti and Bikas K. Chakrabarti, in Eds. F. Abergel, B.K. Chakrabarti, A. Chakraborti and M. Mitra, *Econophysics of order-driven markets* (Springer-Verlag (Italia), Milan, 2011).
 27. "Agent-based models of socio-economic interactions", Anirban Chakraborti and Guido Germano, in Eds. L. Pareschi, G. Naldi and G. Toscani, *Mathematical Modeling of Collective Behavior in Socio-Economic and Life Sciences* (Birkhauser, Berlin, 2010).
 28. "Financial time-series analysis: A brief overview", A. Chakraborti, M. Patriarca, M.S. Santhanam, in Eds. A. Chatterjee and B.K. Chakrabarti, *Econophysics of Markets and Business Networks*, (Springer-Verlag (Italia), Milan, 2007).
 29. "An Outlook on Correlations in Stock Prices", A. Chakraborti, in Eds. A. Chatterjee and B.K. Chakrabarti, *Econophysics of Stock and other Markets*, (Springer-Verlag (Italia), Milan, 2006).
 30. "Kinetic theory models for the distribution of wealth: power law from overlap of exponentials", M. Patriarca, A. Chakraborti, K. Kaski, G. Germano, in Eds. A. Chatterjee, S. Yarlagadda and B.K. Chakrabarti, *Econophysics of Wealth Distributions*, (Springer-Verlag (Italia), Milan, 2005).

Book Review

31. "Essentials of Econophysics Modelling", *Physics Today* 68, 1, 44 (2015), A. Chakraborti; Book written by František Slanina, Oxford U. Press, 2014. (411 pp.).

Reviews and Invited articles

32. "Statistical mechanics of competitive resource allocation using agent-based models", A. Chakraborti, D. Challet, A. Chatterjee, M. Marsili, Y.-C. Zhang, B.K. Chakrabarti, *Physics Reports* 552, 1–25 (2015).
33. "Kinetic exchange models: From molecular physics to social science", M. Patriarca and A. Chakraborti, *American Journal of Physics* 81, 618 (2013).
34. "Econophysics review: II. Agent-based models", A. Chakraborti, I. Muni Toke, M. Patriarca and F. Abergel; *Quantitative Finance* 11:7, 1013 (2011).

35. "Econophysics review: I. Empirical Facts", A. Chakraborti, I. Muni Toke, M. Patriarca and F. Abergel, *Quantitative Finance* 11:7, 991 (2011).
36. "Kinetic exchange models for social opinion formation", M. Lallouache, A. Chakraborti and B.K. Chakrabarti, for the special issue on "Fifteen Years of Econophysics Research", *Science and Culture (Kolkata, India)* 76, 485 (2010).
37. "Wealth distribution: To be or not to be a Gamma?", M. Lallouache, A. Jedidi and A. Chakraborti, for the special issue on "Fifteen Years of Econophysics Research", *Science and Culture (Kolkata, India)* 76, 478 (2010).
38. "Econophysics: A brief introduction to modeling wealth distribution", A. Chakraborti, invited review in *Science and Culture (Kolkata, India)* 73, 55 (2007).

Research articles

39. "Effect of bond-disorder on the phase-separation kinetics of binary mixtures: a Monte Carlo simulation study", A Singh, A Singh and A Chakraborti, *Journal of Chemical Physics*, to appear; *arXiv:1704.08448* (2017).
40. "A complex network analysis of ethnic conflicts and human rights violations", K Sharma, G Sehgal, B Gupta, G Sharma, A Chatterjee, A Chakraborti, *Scientific Reports* 7, 8283 (2017).
41. "Financial fluctuations anchored to economic fundamentals: A mesoscopic network approach", K. Sharma, B. Gopalakrishnan, A.S. Chakrabarti and A. Chakraborti, *Scientific Reports* 7, 8055 (2017).
42. "Investigating resonance energy transfer from protein molecules to van der Waals nanosheets", A.S. Patel, P. Mishra, P.K. Kanaujia, S.S. Husain, G.V. Prakash and A. Chakraborti, *RSC Advances* 7 (42), 26250-26255 (2017).
43. "Quantifying invariant features of within-group inequality in consumption across groups", A.S. Chakrabarti, A. Chatterjee, T. Nandi, A. Ghosh and A. Chakraborti, *Journal of Economic Interaction and Coordination*, 1-22 (2017).
44. "A model-free characterization of recurrences in stationary time series", R Chicheportiche and A Chakraborti, *Physica A* 474, 312-318 (2017).
45. "Resonance Raman scattering and ab initio calculation of electron energy loss spectra of MoS₂ nanosheets", A. Chakraborti, A.S. Patel, P.K. Kanaujia, P. Nath, G.V. Prakash, D. Sanyal, *Physics Letters A* 380, 4057-4061 (2016).
46. "Can an interdisciplinary field contribute to one of the parent disciplines from which it emerged?" A Chakraborti, D Raina, K Sharma, *European Physical Journal Special Topics* 225 (17-18), 3127-3135 (2016).
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