

## Curriculum Vitae of Arunava Chakrabarti

1. **Name:** Arunava Chakrabarti

2. **Sex:** Male

3. **Date of Birth:** 15.11.1959

4. **Present Position:** *Professor*  
Department of Physics  
Presidency University, Kolkata

5. **Residential Address:** CF 333, Salt Lake City  
Kolkata 700064, India.

Tel: (091) 33 2337 2169

Mobile: 94322 33327

***E-Mail (s):*** [arunava.physics@presiuniv.ac.in](mailto:arunava.physics@presiuniv.ac.in); [arunda.chakrabarti@gmail.com](mailto:arunda.chakrabarti@gmail.com)

6. **Address for Postal Communication:** Office Address

7. **Academic Record:**

- (a) *B.Sc. in Physics* (Major) [Graduation]: From Scottish Church College, under Calcutta University in 1981. – Obtained *1<sup>st</sup> Class*.
- (b) *M.Sc. in Physics*: From University of Calcutta in 1983 [Examination held in 1984] – Obtained *1<sup>st</sup> Class* with specialization in *Solid State Physics (Condensed Matter)*
- (c) *Post M.Sc. Associateship Diploma Course*: From Saha Institute of Nuclear Physics, Kolkata, in 1985.

8. **Research Degree:**

*Ph.D.*: From Saha Institute of Nuclear Physics, Kolkata [Degree awarded by University of Calcutta in the convocation of 1994].

**Topic:** *Some Studies on Electronic and Related Properties of Quasicrystalline Lattices.*

## 9. Post-Doctoral Fellowship:

*Commonwealth Post-Doctoral Fellow at H. H. Wills Physics Laboratory, University of Bristol, U.K., from October 1992 to September 1993.*

## 10. Recognitions:

- (a) “*Residential Fellow*” of the Institute of Advanced Studies, *University of Warwick*, UK for the year 2019.
- (b) *Visited the Department of Physics, University of Warwick, UK* as “**India-Lead**” (P.I.) of the **UKIERI Project** running between University of Kalyani and University of Warwick – January 21, 2018 to February 9, 2018, and, May 31 – June 14, 2018.
- (c) *Invited Speaker* in the *International Workshop at the Centre for Theoretical Physics of Complex Systems, Institute for Basic Science, Daejeon, South Korea*, in August-September 2017.
- (d) *Visiting Scientist, Tel Aviv University*, Israel, from June 01, 2017 – July 07, 2017.
- (e) *Visited University of Freiburg, Germany*, on an invitation from the *Quantum Optics* group in the Physics Department, in January 2017.
- (f) *Visiting Scientist – International Centre for Theoretical Physics, Trieste, Italy*, from October 15, 2013 - November 14, 2013.
- (g) *Visiting Professor (with Royal Society Grant under India-UK Science network scheme), Centre for Scientific Computing, Department of Physics, University of Warwick, UK*, June 01, 2009 – June 30, 2009.
- (h) *Visiting Professor with a STINT Grant in Department of Physics, Uppsala University, Sweden*, May 07, 2009 – May 31, 2009.
- (i) *Guest Scientist [Six Weeks]: Max Planck Institute for the Physics of Complex Systems, Dresden, Germany*, October 04, 2006 – November 16, 2006.
- (j) *Guest Scientist [Two Months]: Max Planck Institute for the Physics of Complex Systems, Dresden, Germany*, May 01, 2005 – June 30, 2005.
- (k) *German Academic Exchange Service (DAAD) Fellow [Short Term, Two Months] in Institute fuer Physik, Technische Universitaet, Chemnitz, Germany*, May 01, 2001 - June 30, 2001.

**11. Research Project (s) handled/handling as Principal Investigator/Coordinator:**

- (a) *The UGC-UKIERI Thematic Partnership Award*, between University of Kalyani, India, and University of Warwick, U.K., 2017 – 2019.  
*Project Title: Quasiperiodic Optical Lattices as Magnetic Filters: Localization, Spin Transport and Topological States.*  
*Status: Continuing*  
*Role: Principal Investigator, and “India-Lead”.*

*Grant Value: INR 9,17,000.00 + GBP 26,680.00*

- (b) *DST-FIST Programme*, Department of Physics, University of Kalyani, 2013 – 2018.  
*Status: To be completed in March 2018.*  
*Role: Coordinator*

*Grant Value: INR 2.69 Crores*

- (c) *Electronic and Optical Transmission Properties of Aperiodic and Fractal Waveguide Networks.*  
*Funding Agency: Council of Scientific and Industrial Research (CSIR), Govt. of India.*  
*Duration: Two years (2002 – 2004).*  
*Status: Completed*  
*Role: Principal Investigator*

*Grant Value: INR 4,00,000.00*

**12. Ongoing Research Collaborations:**

- (a) *Photonic Flat Bands* – with Dr. Seababrata Mukherjee, Heriot-Watt University, Edinburgh.
- (b) *Localization – de-localization and spin transport in quantum networks* – with Prof. Rudolf A. Roemer, University of Warwick, UK.
- (c) *On the (almost) complete absence of localization in geometrically disordered structures in quasi-one dimension-* with Dr. Sourin Das, IISER, Kolkata and Prof. Rudolf A. Roemer in University of Warwick, UK.

### **13. Research Interest:**

- Mesoscopic Systems, Spin Transport : Effects of Rashba and Dresselhaus spin orbit interactions on transport properties of mesoscopic rings, Aharonov-Bohm oscillations in the conductance spectrum of closed loop geometries, Persistent Current, Spin polarized transport in 1-d chains of 'magnetic atoms'.
- Localization of electronic states in disordered and deterministically disordered systems in one and two dimensions, Quasiperiodic and Fractal geometries, Ladder networks and metal-insulator transition, Fano resonance in discrete lattice models, Magneto-transport in closed loop geometries.
- Photonic Band Gaps and Resonance in Aperiodic and Fractal structures, Propagation of light and acoustic waves in multilayered hetero-structures, and related properties.
- Graphene nano-ribbons and multi dimensional ladder networks.
- Renormalization group and Transfer Matrix Methods.

### **14. Referee of International Journals:**

Referee of *Physical Review Letters*, *Physical Review B and E*, *Europhysics Letters*, *European Physical Journal B*, *Physica B & E*, *Journal of Physics:Condensed Matter (IOP)* and several other international journals for the past twenty years.

### **15. Ph.D. Students**

#### **Awarded:**

(a) *Dr. Samar Chattopadhyay*: 2005, University of Kalyani

*Thesis title*: Spectral and related properties of some one dimensional quasi-periodic structures.

(b) *Dr. Sheelan Sengupta*: 2005, University of Kalyani

*Thesis title*: Effect of positional correlations on the spectral properties of certain low dimensional model systems.

(c) *Dr. Supriya Jana*: 2012, University of Kalyani.

*Thesis title:* Electronic transport in model mesoscopic systems.

(d) **Dr. Biplab Pal**, DST INSPIRE Fellow, University of Kalyani, 2017.

*Thesis title (tentative):* Electron states, charge and spin transport in low dimensional structures with quasi-periodic and fractal geometries.

**Currently working:**

- (a) Atanu Nandy, former Scholar with a NET Scholarship, currently at Kulti College, West Bengal - About to submit.
- (b) Amrita Mukherjee, **DST-INSPIRE** Fellow, University of Kalyani.

**16. Earlier Awards:**

- (a) National Scholarship from **1976** (School Leaving) to **1983** (M.Sc.)
- (b) K. L. De gold medal in Physics, awarded by Scottish Church College, in 1981.

**17. Service Record:**

- (a) October 1985 to February 1989 – **Senior Research Fellow**, Saha Institute of Nuclear Physics, Kolkata (*Temporary position*).
- (b) March 1989 to March 1996 – **Lecturer**, and subsequently **Senior Lecturer** in Physics, Scottish Church College, Kolkata.
- (c) April 1996 to February 1999 – **Senior Lecturer in Physics, University of Kalyani**, West Bengal, India.
- (d) March 1999 to February 2007 – **Reader in Physics, University of Kalyani**, Kalyani, west Bengal, India.
- (e) March 2007 till date – **Professor of Physics, University of Kalyani**, Kalyani, West Bengal, India.

**UNIVERSITY TEACHING (Till June 2018): 22 Years & 3 Months**

**EXPERIENCE in UG+PG TEACHING (Till June 2018) – 29 Years & 3 Months**

## **18. Courses Taught :**

A. **Undergraduate Course** [ in Scottish Church College, and afterwards in University of Kalyani till 2001]

**Theory:** Mathematical Methods, Classical Mechanics, Condensed Matter Physics, Physical Optics, Heat and Kinetic Theory, Electricity and Magnetism.

**Laboratory:** Electrical and General Laboratory, Optics Laboratory (*till 2001, when UG courses from Kalyani University were withdrawn*)

B. **Post Graduate Course in University of Kalyani :**

**Theory:** Mathematical Methods, Classical Mechanics, Quantum Mechanics, Electrodynamics, Condensed Matter Physics – General and Special Paper, Many Body Physics, Mesoscopic systems, Transport properties.

**Laboratory:** Solid State Physics Special Laboratory in 4<sup>th</sup> Semester and 1<sup>st</sup> Semester lab.

**C. Pre-Ph.D. Course in University of Kalyani:**

Advanced Condensed Matter Physics, Green's Function Techniques, Renormalization Group Methods, Computer Programming and Numerical Methods.

## **19. Other services to the professional community**

- (a) Member, Board of Research Studies, *University of Burdwan*.
- (b) Member, Board of Studies, *West Bengal State University*, Barasat.
- (c) Member, Board of Moderators, *Calcutta University*.
- (d) Member, Board of Studies, *West Bengal Womens' University*, Diamond Harbour.
- (e) Acted as paper setter, examiner and member of the moderation board of various examinations, undergraduate and postgraduate faculties of Institutions other than the University of Kalyani, and still continuing to do so.
- (f) Thesis examiner of several Universities.
- (g) Ph.D. Viva Voce – acted as External Examiner for *I.S.I., Kolkata, Jadavpur University, University of Hyderabad*, etc.
- (h) Member of K.V.P.Y. (***Department of Science & Technology***) interview board 2011, and 2015.

## **20. Teaching beyond curriculum:**

### **A. Interaction with Students**

- Have been interacting with students in and outside West Bengal over the last twenty years to motivate the younger generation to fundamental science through seminars, especially at high school, undergraduate and post-graduate levels.
- Acted as a resource person (**Two Times**) in workshops organized in Allahabad, India by the *Indian National Science Academy (INSA)*, Allahabad Chapter.
- Acted as a resource person in the **INSPIRE** programme for young students organized by the *Department of Science and Technology (DST)*, India in Allahabad (2010).

### **B. Interaction with College Teachers:**

- (a) Resource person in U.G.C. sponsored refresher course for College Teachers, University of Calcutta (**2013 & 2014**).
- (b) Resource person in the U.G.C. sponsored refresher course for College Teachers, *University of North Bengal* (**2011**).
- (c) Resource person in the refresher course for College Teachers, organized by the *Institute of Physics*, Bhubaneswar, Orissa, India (**2006 & 2007**).
- (d) Resource person in the U.G.C. sponsored refresher course for College Teachers, *University of Kalyani* (**2002**).
- (e) Resource person in the U.G.C. sponsored refresher course for College Teachers, *University of Calcutta* (**2002**).

## **21. Courses taught in Institutes other than University of Kalyani in past twelve years :**

- (a) *Scottish Church College*, Calcutta – in M.Sc. (Chemistry) about Crystals, and fundamentals of the Solid State [for students of Physical Chemistry], for 3 years.
- (b) *Lady Brabourne College*, Calcutta – M.Sc. Physics students – Basic Condensed Matter Physics and quasi-periodic systems as advanced topic [Taught for 2 years].
- (c) *West Bengal State University* – M.Sc. students – Aperiodic systems and a part of the Many Body Physics as their special paper [Taught for one semester].

- (d) **Tripura University** – M.Sc. students – Electrodynamics, Condensed Matter Physics. [Taught twice, as special set of lectures], around 1999-2000.
- (e) **Uppsala University, Sweden** – a short course on Quasi-Crystals, meant for Ph.D. students in the Physics Department (2009).

## **22. Selected talks delivered (between 2005 and 2018):**

### **A. To Condensed Matter Physics Community**

- *On delocalization in disordered systems* – Disordered Quantum Systems group in **University of Warwick, UK**, February 2018.
- *Problems in Physics with many scales of length* – **Burdwan University**, February 2018.
- *Flat bands, localization and related issues* – **Centre for Theoretical Physics of Complex Systems, Institute for Basic Science, Daejeon, South Korea**, August 2017.
- *Engineering bands of extended electronic states in low dimensional systems* – **University of Freiburg, Germany**, January 2017.
- *Problems in Physics with multiple scales of length* – **Scottish Church College**, September 2017, **University of Kalyani**, November 2017.
- *On the absence of localization in certain topologically disordered systems* – **I.I.T. Kharagpur**, February 2017.
- *Spin filter for arbitrary spins* – **Burdwan University** 2017.
- *Spin filter for arbitrary spins by substrate engineering* – **University of Hyderabad Central**, 2017.
- *Does disorder always lead to localization ?* – **S. N. Bose National Centre for Basic Sciences**, in a National Conference organized by West Bengal State University, 2016.
- *Physics in Low dimensions (Magic on Your Tabletop)* – **Jogamaya Devi College, Kolkata**, in a National Level Conference, November 2016.
- *Engineering bands of extended electronic states in low dimensional systems* – **Vidyasagar University**, 2016.
- *Electrons in Flatland* – **Vidyasagar University**, 2015
- *The forbidden beauty: The geometry and physics of almost periodic order* – **Presidency University**, 2014.
- *Geometry and Physics of almost periodic order* – **Calcutta University**, 2013.
- *Metal Insulator transition and engineering of extended states in disordered systems beyond 1-d* – **Institute of Physics, Bhubaneswar**, February 2013.
- *The physics of quasiperiodic order* – **I.I.T. Kharagpur**, March 2013.

- *Almost periodic order: basic physics and applications* – Invited talk at the Workshop organized by **Vidyasagar University** at DRDO complex, Chandipur, **January 2013**.
- *Delocalization of electronic states in disordered systems* – **I.I.S.E.R.**, Kolkata, 2013.
- On the Physics of Aperiodic Systems – a set of **4 talks** delivered in the **Department of Physics, Uppsala University**, May, 2009.
- *Metal-Insulator transition in a ladder network: an exact result* – **Centre for Scientific Computing, University of Warwick, UK**, June, 2009.
- *Metal-Insulator transition in a ladder network: an exact result* – **Harishchandra Research Institute, Allahabad**, October, 2009.
- *Fano resonance in discrete lattice models* – **Max Planck Institute for the Physics of Complex Systems, Dresden, Germany, October, 2006** [delivered in Non-linear Physics Group].
- *Positional correlations and electronic states in one dimensional lattices* - **Max Planck Institute for the Physics of Complex Systems, Dresden, Germany**, November, 2006 [Mesoscopic Physics Group].
- *Hidden dimmers and matrix maps in quasiperiodic systems* – **Institute fuer Physik, Technische Universitaet, Chemnitz, Germany**, 2005.
- *Cycles of the matrix maps in certain aperiodic systems* – **Centre for Theoretical Studies (CTS), I.I.T., Kharagpur**, 2005.

**B. Some of the talks given to younger students (Motivating Talks):**

- *In between order and disorder: from origami to Nobel Prize* – **Uttarpara College**, 2017.
- *Physics in low dimensions* – **Ranaghat College**, West Bengal, 2016.
- *Physics in low dimensions: Magic on your table top* – **Shantipur College**, 2016.
- *The adventure in Low Dimensions* – **Maulana Azad College, Calcutta**.
- *The forbidden beauty* – Department of Physics, **Bethune College, Calcutta**.
- *The Physics of Quasicrystals* – **Narasimha Dutta College, Howrah, West Bengal**.
- *The forbidden beauty (The Physics of Aperiodic Order)* – **Jogamaya Devi College, Calcutta**, 2009.
- *Photoelectric Effect* – **Santipur College**, Nadia, West Bengal.
- *Photoelectric effect* – **Hooghly Mohshin College**, west Bengal
- *In between order and disorder* – **Scottish Church College**, Kolkata.

**23. Conferences attended**

<i>Conference</i>	<i>Year</i>	<i>Status</i>	<i>Place</i>	<i>Participation</i>
1. Workshop on Flat Band Networks	2017	International	Daejeon, South Korea	Invited Talk

2.Recent Trends in Condensed Matter Phys.	2017	National	I.I.T., Kharagpur	Invited Talk
3. National Seminar on Modern Trends in Condensed Matter Physics	2016	National	S. N. Bose National Centre, organized by W.B State University.	Invited Talk
4. Aperiodic 12	2015	International	Prague	Poster
5. ICQ 12	2013	International	Krakow, Poland	Poster
6. Condensed Matter Days 2010	2010	National	University of Kalyani West Bengal, India	Joint Convenor
7. ICQ 10	2008	International	Zurich, Switzerland	Poster
8. Condensed Matter Days 2008	2008	National	Visva Bharati, West Bengal	Poster
9. Physics of zero and 1-d nanoscopic Systems	2006	International	S.I.N.P., Kolkata	Chaired two sessions
10. DAE Solid State Physics Symposium	2002	National	Panjab University Chandigarh	Poster
11. Condensed Matter Days 1999	1999	National	Jadavpur University Kolkata, India	Invited Talk
12. DAE Solid State Physics Symposium	1999	National	IGCAR, Kalpakkam	Invited Talk
13. Condensed Matter Days 1996	1996	National	Tripura University, Agartala, Tripura	Poster
14. Condensed Matter Days 1995	1995	National	Institute of Physics Bhubaneswar, India	Oral
15. Condensed Matter Days 1994	1994	National	S.I.N.P. Kolkata	Oral
16. DAE Solid St. Phys. Physics Symposium	1989	National	I.I.T. Chennai, India	Poster
17. DAE Solid State Physics Symposium	1988	National	Bhopal University Bhopal, M.P.	Poster
18. DAE Solid State Physics Symposium	1987	National	B.A.R.C., Mumbai	Poster

## Administrative Experience

- (a) **Coordinator, FIST Program of Department of Science and Technology, Govt. of India** – currently being implemented in the Department of Physics, University of Kalyani from April 2013 to March 2018.
- (b) **Chairman, Central Purchase Committee**, University of Kalyani – continuing.
- (c) **Chairman, Departmental Research Committee**, University of Kalyani.
- (d) Acted as **Chairman, Undergraduate Board of studies**, University of Kalyani, from 2014 to 2016.
- (e) **Head of the Physics Department** of University of Kalyani, two times, from **2005 to 2007**, and from **2014 to 2016**.
- (f) Acted as a **Member** of a committee responsible for a scrutiny of the Semester system of Examinations, University of Kalyani.
- (g) Took active role in framing the UG and P.G. syllabi over all these years.
- (h) **Member** of Screening Committee for recruitments in the Physics Department, 2012, and in the past as HOD.
- (i) Actively involved in framing the Departmental budget for the University Grants Commission plans.
- (j) Involved in all other kinds of administrative work related to the Department of Physics.
- (k) **Member, Faculty Council**, University of Kalyani from (2005-2007 as HOD, and 2007 onwards as a Professor, University of Kalyani).

---

*The above information are true to the best of my knowledge*

*Arunava Chakrabarti*

(ARUNAVA CHAKRABARTI)

