



# Dr. Narayan Kundu

Postdoctoral Research Associate, University of Kassel, Germany

## PERSONAL

- Narayan Kundu
- Nationality: Indian
- 2nd January, 1995
- Purusottampur, Agarda,
- Bankura, WB, India-722144
- [kundu.narayan1995@gmail.com](mailto:kundu.narayan1995@gmail.com)
- [kundu.narayan1995@zoho.com](mailto:kundu.narayan1995@zoho.com)
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- +917797543452
- +4915510401596

## SKILLS

### Languages

Bengali	Mother Tongue
English	● ● ● ● ●
Hindi	● ● ● ● ●
Sanskrit	● ● ● ● ●

### SPECIALIZATION

Atom molecule & Optical Physics (PhD)

Nuclear and Particle physics (M.Sc)

### National Eligibility Test

- Marks Obtained: **98.5/200**
- All India Rank : **75**
- Year: December 2018

### JEST Score

- All India Rank : **156**
- Year: March 2018

## WORKING STATUS

I am a postdoctoral fellow at the **University of Kassel**, specializing in strong field ionization, Coulomb explosion imaging, ion cooling and trapping, and nonlinear optics under the mentorship of **Heisenberg Professor Dr. Jochen Mikosch, a former Humboldt Fellow**. My research focuses on light-matter interactions through advanced ultrashort attosecond science techniques.

Previously, as an **INSPIRE Fellow** at **IISER Kolkata**, under **Prof. Dhananjay Nandi**, I explored electron-matter interactions via nano-second pulsed electron-impact charge transfer dissociation of atmospherically and biologically significant molecules. I also studied electron attachment to **supersonically cooled Van der Waals atomic clusters** in contrast to effusive molecular beams. Using techniques like Time-of-Flight (TOF) mass spectrometry, velocity map imaging (VMI), and time-resolved molecular dynamics, I uncovered key insights into the breakdown of the dipole-Born approximation.

My expertise spans data science, instrumentation design, and quantum chemistry modeling using tools such as **PYTHON, SIMION, ONSHAP, LABVIEW, MATLAB, GAUSSIAN, ORCA, MOLCAS, & QCHEM**. These skills integrate seamlessly into my research, enabling in-depth analysis of experimental data. Bridging electron- and light-matter interactions, my Ph.D. and postdoctoral work offer a comprehensive global perspective on interaction physics, uniting complementary realms of cutting-edge science.

## EDUCATIONAL QUALIFICATION

2018- 2024	<b>PhD in Physics</b> DEPARTMENT OF PHYSICAL SCIENCES · IISER Kolkata CGPA in course work - <b>8.50</b> 
2015-2017	<b>M.Sc in Physics</b> DEPARTMENT OF PHYSICS · University of kalyani Obtained Marks <b>65.13%</b> 
2012-2015	<b>B.Sc in Physics</b> BANKURA CHRISTIAN COLLEGE · Burdwan University Obtained Marks <b>61.88%</b> 
2010-2012	<b>Higher Secondary Education (WBCHSE)</b> BISHNUPUR HIGH SCHOOL · Obtained Marks <b>82.6%</b> 
2004-2010	<b>Secondary Education (WBBSE)</b> PURUSOTTAMPUR HIGH SCHOOL · Obtained Marks - <b>86.4%</b> 

## SCHOLARSHIP AWARDS

2018-2023	<b>DST INSPIRE Fellowship</b> Grant from Department of Science and Technology, Govt. of India. Registration No- <b>IF180019</b>
2012-2017	<b>DST INSPIRE Scholarship</b> Grant from Department of Science and Technology, Govt. of India. Scholar No- <b>12983/2012</b>
2010-2012	<b>Indian Oil Scholarship</b> from Indian Oil Corporation Limited. Scholar No- <b>10240506</b> .
2010-2012	<b>Swami Vivekananda MCM Merit Cum Means Scholarship</b> from Govt. of West Bengal, India.

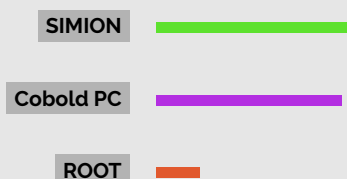
## GATE Score

- All India Rank : **1662**
- Year: March 2019

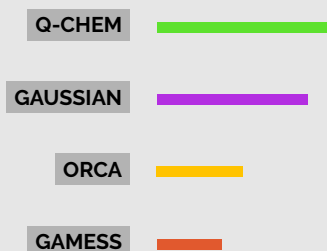
## Computational Program



## Collisional Physics



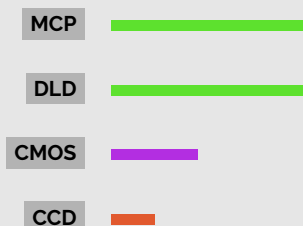
## Quantum Chem. Modeling



## 2D and 3D Designing



## Detector Handling



## SCIENTIFIC ARTICLE

- 6 "Coexistence of Shape and Feshbach Resonances in the Dissociative Electron Attachment" – **N. Kundu**, and D. Nandi. Manuscript will be submitted soon in Nature Communication.
- 5 "Ion-pair dissociation dynamics in electron collision with carbon dioxide probed by velocity slice imaging" – **N. Kundu**, S. Naskar, I. Jana, A. Paul and D. Nandi. [click here](#) to read the article. To be submitted **JCP**
- 4 "Effect of velocity slice techniques on the dissociation dynamics in electron collision with isolated molecules" – **N. Kundu**, D. Biswas, A. Paul and D. Nandi. [click here](#) to read the article.
- 3 "Tomography of Non-radiative and quasi-resonant charge transfer ion-pair formation in electron collision with molecule" – **N. Kundu**, V. Kumar, and D. Nandi. - Under Review in **PRL**
- 2 "Observation of Renner-Teller and predissociation coupled vibronic intensity borrowing in dissociative electron attachment of OCS" – **N. Kundu**, and D. Nandi. **JCP 160, 114315 (2024)**-[click here](#)
- 1 "Breakdown of dipole Born approximation and the role of Rydberg's pre-dissociation for the electron-induced ion-pair dissociation to oxygen in the presence of background gases" – **N. Kundu**, V. Kumar, and D. Nandi. - **JCP 158, 154305 (2023)**-[click here](#)

## SEMINARS AND CONFERENCES ATTENDED

- |                |  |
|----------------|--|
| December 2024  | I have participated virtually in <b>CINSaT</b> and presented a poster on "From inter-molecular to intra-molecular femtochemical dynamics" hosted by University of Kassel, Germany.   |
| September 2024 | I have participated Physically in <b>SFB-Retreat</b> and presented a poster on "Dynamics of Molecules in Intense Laser Fields Studied with a Reaction Microscope" (Poster No-03). hosted by University of Kassel, Germany.   |
| February 2023  | I have participated Physically in <b>23<sup>rd</sup> National Conference of Atomic and Molecular Physics (NCAMP-23)</b> and presented a poster on "Low-energy electron-induced ion-pair dissociation to Trilobite and Butterfly resembling long-range Rydberg system" hosted by Indian Institute of Space Science and Technology (IIST), Thiruvananthapuram with support from IISER Thiruvananthapuram, SPL and ISRO |
| July 2021      | I have participated virtually in <b>XXXII International Conference on Photonic, Electronic and Atomic Collisions 2021 in virtual format (VICPEAC-2021)</b> and presented a poster on "Effect of slicing in velocity map imaging for the study of dissociation dynamics in electron collision with isolated molecules" (Poster No-G18).   |
| March 2020     | I have participated physically in <b>8th Topical Conference (TC-2020) on Atomic and Molecular Collisions for Plasma Application</b> hosted by IIT Roorkee and presented a poster on "Ion-pair Dissociation Dynamics of Carbon dioxide probed by Velocity Slice Imaging".   |
| March, 2019    | I have participated physically in <b>22nd National Conference on Atomic and Molecular Physics (22nd-NCAMP)</b> hosted by IIT Kanpur and presented a poster on "Dissociative electron attachment(DEA) to gas phase molecule".   |
| February 2019  | I have participated physically in <b>National Physics Meet</b> conference held at the University of Kalyani and presented a poster on "SPOKE-ACTION-AT-A-DISTANCE: QUANTUM ENTANGLEMENT". My presentation has been selected as <b>2nd prize</b> based on the poster session.   |

## Scientific Techniques


TOFMS 

VMI 

Ion Trapping 

## Other Tools

LATEX-Overleaf 

ORIGIN 

LAB VIEW 

HTML 

OS:   

## References

### Prof. Jochen Mikosch

Heisenberg Professor  
University of Kassel  
Postdoc Supervisor  
✉ [mikosch@uni-kassel.de](mailto:mikosch@uni-kassel.de)

### Prof. Dhananjay Nandi

DPS, IISER Kolkata  
Ex. President of ISAMP  
PhD Supervisor  
✉ [ghananjay@iiserkol.ac.in](mailto:ghananjay@iiserkol.ac.in)

### Prof. Ashwani K. Tiwari

DCS, IISER Kolkata  
Dean of IISER Kolkata  
Theoretical Collaborator  
✉ [ashwani@iiserkol.ac.in](mailto:ashwani@iiserkol.ac.in)

### Dr. Aryya Ghosh

Ashoka University, India  
Theoretical Collaborator  
✉ [aryya.ghosh@ashoka.edu.in](mailto:aryya.ghosh@ashoka.edu.in)

## MASTER THESIS

2016-2017 **Effect of Higher Order Correction in Lande-g-factor for Electron and the Lamb Shift** under the Guidance of **Dr. Jyoti Prasad Saha**, Department of Physics, University of Kalyani.

## INVITED LECTURES

September 2022 "Low-energy electron-induced ion-pair dissociation to Trilobite-resembling long-range heavy Rydberg system" – **Gluon Journal club at IISER-Kolkata**.

August 2024 "Global warming, its effects, causes, and possible solutions" – **Bish-nupur K. M. High School**

## TEACHING EXPERIENCES

### 1. Physics Laboratory - PH2103

**Instructor**- Prof. Nirmalya Ghosh, Prof. Chiranjeeb Mitra and Prof. Subhasish Sinha  
**Session**-Autumn 2020, Department of Physical Sciences, IISER Kolkata,

### 2. Basic Quantum Mechanics - PH2201

**Instructor**- Prof. Siddhartha Lal  
**Session**-Spring 2021, Department of Physical Sciences, IISER Kolkata



## LIFE MEMBER

1. I am a life member of **Indian society of atomic and molecular physics (ISAMP)** since March 2019 with Registration No: **1617**.
2. I have been a member of **the Breakthrough Science Society (BSS)** since June 2024. The BSS is a voluntary organization committed to the cause of **Science, Culture and scientific outlook**.

## EXTRA CURRICULUM ACTIVITY

- In September 2020, I was elected as **General Secretary for Academies** matter of IISER Kolkata student affair Council. I have presented the students' community in our **SENATE** meeting in the presence of the **MHRD** and **BOG** members and completed my tenure with the certificate of appreciation.
- I was an active member in several **Outreach programs of IISER Kolkata and volunteered for the Institute Open Day**.
- July-2016 to August-2017, I have represented my Department of Physics as **an office Barrier in University of Kalyani**

## HOBBIES

-  **Sports:** I love to play and watch Cricket, Football, Volleyball and Carrom. In the inter-iiser sports meet (**IISM**)-2022, I represent IISER-Kolkata as a Carrom player.
-  **Photography:** I am an amateur photographer, is an art on frozen time. My areas of choice are Nature, Street and Astro-Photography.

## DECLARATION

- I, at this moment, declare that all the statements given in the curriculum vitae are true and correct to the best of my knowledge and belief.

Date: 02/01/2025

  
Signature