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
- kundu.narayan1995@zoho.com
- kundu.narayan1995@uni-kassel.de
- +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, ONSHAPE, 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	**PhD in Physics** Department of Physical Sciences · IISER Kolkata CGPA in course work - **8.50**	
2015-2017	**M.Sc in Physics** Department of Physics · University of kalyani Obtained Marks **65.13%**	
2012-2015	**B.Sc in Physics** Bankura Christian College · Burdwan University Obtained Marks **61.88%**	
2010-2012	**Higher Secondery Education (WBCHSE)** Bishnupur High School · Obtained Marks **82.6%**	
2004-2010	**Secondery Education (WBBSE)** Purusottampur High School · Obtained Marks - **86.4%**	

Scholarship Awards

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

GATE Score

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

Computational Program

PYTHON

MATLAB

Mathematica

Collisional Physics

SIMION

Cobold PC

ROOT

Quantum Chem. Modeling

Q-CHEM

GAUSSIAN

ORCA

GAMESS

2D and 3D Designing

INKSCAPE

Solid Works

On Shape

Detector Handling

MCP

DLD

CMOS

CCD

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 predissociation 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 **CINSaT** 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 **SFB-Retreat** 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 **23^{rd} National Conference of Atomic and Molecular Physics (NCAMP-23)** 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 form IISER Thiruvananthapuram, SPL and ISRO

July 2021 I have participated virtually in **XXXII International Conference on Photonic, Electronic and Atomic Collisions 2021 in virtual format (VICPEAC-2021)** 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 **8th Topical Conference (TC-2020) on Atomic and Molecular Collisions for Plasma Application** 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 **22nd National Conference on Atomic and Molecular Physics (22nd-NCAMP)** hosted by IIT Kanpur and presented a poster on **"Dissociative electron attachment(DEA) to gas phase molecule".**

February 2019 I have participated physically in **National Physics Meet** 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 **2nd prize** 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

Prof. Dhananjay Nandi
DPS, IISER Kolkata
Ex. President of ISAMP
PhD Supervisor
dhananjay@iiserkol.ac.in

Prof. Ashwani K. Tiwari
DCS, IISER Kolkata
Dean of IISER Kolkata
Theoretical Collaborator
ashwani@iiserkol.ac.in

Dr. Aryya Ghosh
Ashoka University, India
Theoretical Collaborator
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" – Bishnupur 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