


Faculty Profile

Title	Dr.	First Name	Ranjeet Kumar	Last Name	Karn	Photograph
Designation	Asst. Professor					
Address	Department of Physics, Jam. Cooperative College, Jamshedpur - 831001					
Phone No.	+91 9631298090, WhatsApp : +91 - 9113795956					
Emai:	rkkarn@gmail.com					
Scholar Google	https://scholar.google.com/citations?hl=en&user=yy41BkYAAAAJ				H-index	5
Research Gate	https://www.researchgate.net/profile/Ranjeet-Karn				RG Score	18.7
Scopus Profile	https://www.scopus.com/authid/detail.uri?authorId=8643522900					

Educational Qualification

Degree	Institution	Specialization	Year
Ph. D.	Kolhan University, Chaibasa & IUAC, New Delhi	Accelerator Based Atomic Physics	2017
M. Phil/Others Pre-Ph. D. Course Work	Inter University Accelerator Centre, New Delhi	Accelerator Physics, Nuclear Physics	2005
Masters	IIT Guwahati	QIT & QC, Laser, Semiconductor, Adv. Mes. Teq.	2003
B.Sc. (H)	BRA Bihar University, Muzaffarpur		2000

NET/SLET/GATE/JEST

- Qualified **CSIR-UGC NET** in June 2003.
- Selected as **Assistant Professor** through **Jharkhand Public Service Commission (JPSC)**, for Ranchi University (later on Kolhan University) & Its constituent Colleges.

Academic Career Profile (from current to post M. Sc. Physics Academic or Research)

- Worked as **JRF(DST)** at **IUAC (NSC), New Delhi** from Nov. 25, 2003 to Nov. 25, 2005.
- Worked as **SRF(DST)** at **IUAC (NSC), New Delhi** from Nov. 25, 2005 to May-13, 2007.
- Worked as **Lecturer (Physics)** at **CITM, Faridabad** from Aug. 2007 to Mar. 16, 2008.
- Working as **Asst. Professor** at **Kolhan University, Chaibasa (Formerly as a part of Ranchi University, Ranchi), & its constituent colleges since March-18, 2008 at**
 1. Dept. Of Physics, **Jam. Co-operative College, Jamshedpur (a constituent PG college of Ranchi / Kolhan University)** from March-18, 2008.
 2. Worked as **Asst. Professor & Head, Department of Physics, K S. College, Seraikella** from June 27, 2016 to 18 April, 2017.
 3. Working as Asst. Professor at **University Department of Physics, Kolhan**

- University, Chaibasa, since 19 April, 2017 to till date.
4. Working as Asst. Professor at Dept. Of Physics, **Jam. Co-operative College, Jamshedpur (a constituent PG college of Kolhan University, Chaibasa)**, since 19 April, 2017 to till date.

Area of Interest / Specialization

- Accelerator Based Atomic Physics (Highly Charged Ions)
- Instrumentation of x-ray spectroscopic setup
- X-ray spectroscopy
- Non-linear Dynamics & Chaos
- Computational Physics
- Nanomaterials

Special Elective Courses in M. Sc.:

- Quantum Information Theory
- Laser Physics
- Physics of Semiconductor
- Advance Measurement Techniques

Software Skill:

- Operating Systems: UNIX, Scientific Linux, LINUX, Ubuntu and WINDOWS-10/7/XP/2010.
- Programming languages: **R, Scilab, MATLAB 7, Fortran, C, Python**, LabVIEW Graphical Programming.
- Assembly Languages: Intel 8085/8086 Microprocessors.
- Web Designing: Experience of developing the web-page of Atomic Physics Research Activity of IUAC (NSC), Jam. Co-operative College, Jamshedpur & K S College, Seraikella

Research Profile

Ph. D. Awarded / Registered:

Sl. No.	Title of Thesis	Name of Scholar	Status (Awarded with date / Registration with date)
1.	Beam-Foil Spectroscopy of Highly Charged Ions	Janmejy Mahato	Ongoing
2.	Study of Charge Exchange Phenomenon in Ion-Solid Collision	Deepak K Swami	Ongoing

Research papers published in relevant Refereed/Peer Reviewed Journals (at least two)

Academic Session: 2022-23 (July – 01, 2022 to June 30, 2023)							
Sl. No.	Title	Authors	Journal Name	Year, Vol., Page	ISSN / e-ISSN	Doi	UGC Care List No / SCI*/WoS
1.	Exploring the influence of target atomic number (Z ₂) on mean equilibrium charge state (q̄): A comprehensive study	R K Karn et al.	Frontiers in Physics	11:114 5632, 2023	22964 24X	10.3389 /fphy.2023.1145632	Sci/WoS
2.	Formation of self-organized	R K Karn	Radiatio	2022,	0969-	https://doi.org/10.3389/fphy.2022.1145632	Sci/WoS

	nano-dimensional structures on InP surfaces using ion irradiation and their wettability: A study based on experimental and theoretical concepts of surface	et al.	n Physics and Chemistry , Elsevier	199, 110353	806X ISSN	oi.org/10.1016/j.radphyschem.2022.110353	
Academic Session: 2016-17 (July – 01, 2016 to June 30, 2017)							
3.	Investigations of electrical and optical properties of low energy ion irradiated α-Fe₂O₃ (hematite) thin films	R K Karn et al.	AIP Conference Proceedings	2016, 1731, 120021	0094-243X(print) 1551-7616(web)	https://doi.org/10.1063/1.4948093	Sci/WoS
	Earlier						
4.	Lifetime Measurement of Highly Charged Ions Relevant to Astrophysics	R K Karn et al.	Journal of Atomic, Molecular, Condensate & Nano Physics	2015, 2, No. 2, pp. 127–132	2349-2716 (online); 2349-6088 (print)	https://doi.org/10.26713/jamcnp.v2i2.334	Sci/WoS
5.	Multi channel Doppler tuned spectrometer to study highly charged ions	R K Karn et al.	Review of Scientific Instruments, AIP	2014, 85, 066110	0034-6748 1089-7623	//doi.org/10.1063/3.14884079	Sci/WoS
6.	Beam-single and beam-two-foil experimental facility to study physics of highly charged ions	R K Karn et al.	Review of scientific instruments, AIP	2006, 77, 033107	0034-6748 1089-7623	https://doi.org/10.1063/1.2186212	Sci/WoS
7.	Peculiar time dependence of unexpected lines in delayed beam-foil X-ray spectra of V, Fe and Ni	R K Karn et al.	Nuclear Instruments and Methods in Physics Research Section B, Elsevier	2005, 233, 191-195	0168-583X	https://doi.org/10.1016/j.nimb.2005.03.104	Sci/WoS

Reference Book / Chapter published in Refereed/Peer Reviewed Book

Sl. No.	Title	Author/s	Publisher's name	Year Page & Volume	ISSN / ISBN
Session: 2018-19 (July – 01, 2018 to June 30, 2019)					
1.	Atomic and magnetic force studies of co thin films and nanoparticles: understanding the surface correlation using fractal studies	Indra Sulania, RP Yadav, Ranjeet Kumar Karn	Springer International Publishing AG, part of Springer Nature	2018 Doi: https://doi.org/10.1007/978-3-319-92955-2_7	Print ISBN978-3-319-92954-5 Online ISBN978-3-319-92955-2
Session: 2017-18 (July – 01, 2017 to June 30, 2018)					
Session: 2016-17 (July – 01, 2016 to June 30, 2017)					
Earlier					

Conference Presentations

Sl. No.	Name of Conference	Place	Date: from to	National / International	Title of Abstract
Session: 2020-21 (July – 01, 2020 to June 30, 2021)					
Session: 2019-20 (July – 01, 2019 to June 30, 2020)					
1.	The International Conference on Atomic, Molecular, Optical and Nano Physics with Applications (CAMNP 2019)	Department of Applied Physics, Delhi Technological University, Delhi.	December 18-20, 2019	International	Design and simulation of inclined state charge state analyzer for study of highly charged ion by Janmejaya Mahto and Ranjeet K. Karn
2.	The International	Department of Applied Physics, Delhi	December 18-20, 2019	International	Study of He- and Li-Like Fe, Ni & V Using Multi Channel Doppler Tuned

	Conference on Atomic, Molecular, Optical and Nano Physics with Applications (CAMNP 2019)	Technological University, Delhi.			Spectrometer Setup by Ranjeet K. Karn , Deepak Swami, Janmejay Mahto, Basu Kumar, C P Safvan and T Nandi
3.	Acquaintance Program of IUAC New Delhi on "Accelerator and its related Science"	Patna University, Patna	November – 11, 2019.	National	Accelerator Based MCDTS X-Ray Spectroscopy Setup for Astronomy by Ranjeet Kumar Karn
Session: 2018-19 (July – 01, 2018 to June 30, 2019)					
4.	22 nd National Conference on Atomic and Molecular Physics (NCAMP - XXII)	Indian Institute of Technology Kanpur, Kanpur, India	25 th - 28 th March 2019	National	Study of He- and Li-Like Fe, Ni & V Using Multi Channel Doppler Tuned Spectrometer Setup, Ranjeet K. Karn , Deepak Swami, Janmejay Mahto, Basu Kumar, C P Safvan and T Nandi
Session: 2017-18 (July – 01, 2017 to June 30, 2018)					
5.	National Conference on Enhancing New Innovation and Challenges in Nano, Chemical and Biological	TATA College, Chaibasa	16-18, February, 2018	National	Morphological studies of Iron oxide thin films using Scanning Electron Microscopes: a quest to look into Nano Scale by Ranjeet K Karn
6.	Recent Advances in Physical Sciences (RAPS-2018)	P. K. Roy Memorial College, Dhanbad	January 19-20, 2018	National	Accelerator Based MCDTS X-Ray Spectroscopy Setup for Astronomy by Dr. Ranjeet Kumar Karn
Session: 2016-17 (July – 01, 2016 to June 30, 2017)					
7.	National Conference on Nuclear and Accelerator Physics (NCNAP – 2016)	Central University of Jharkhand, Ranchi.	4-6 October, 2016	National	Accelerator based experimental setup relevant to x-ray astronomy during by Ranjeet Kumar Karn
Earlier (Before July – 01, 2016)					

8.	DAE Solid State Physics Symposium 2015	Amity University, Noida		National	Investigations of electrical and optical properties of low energy ion irradiated α -Fe ₂ O ₃ (hematite) thin films by Indra Sulania, Jyoti Kaswan, Vinesh Attatappa, Ranjeet Kumar Karn , D. C. Agarwal, and D. Kanjilal in.
9.	4 th International Conference on Current developments in Atomic, Molecular, Optical and Nano Physics (CDAMOP 2015)	Dept. Of Physics and Astrophysics, University of Delhi, Delhi.	11-14 March, 2015	International	High Resolution Study of Metastable Transitions in He- & Li-like Fe Relevant to Astrophysics by Ranjeet K Karn , C. N. Mishra, Nissar Ahmad, C P Safvan and T Nandi
10.	20 th National Conference on Atomic and Molecular Physics (NCAMP-XX)	IIST, Thiruvananthapuram.	9-12 December, 2014	National	Precise Lifetime Measurement of Highly Charged Ions Relevant to Astrophysics by Ranjeet K Karn , C. N. Mishra, Nissar Ahmad, C P Safvan and T Nandi
11	20 th National Conference on Atomic and Molecular Physics (NCAMP-XX)	IIST, Thiruvananthapuram.	9-12 December, 2014	National	Design and testing of position sensitive proportional counter by Deepak Kumar Swami, K. Haris, Hala, R. K. Karn and T. Nandi
12.	DAE Symposium on Nuclear Physics,	Banaras Hindu University, Varanasi- 221005 Volume: 59		National	A Setup for Experiment in the Cross-link of Atomic and Nuclear Physics by T. Nandi, P. Sharma, D. Chandwani, G. Sharma, K. Haris, Hala, G. Singh, G. Kaur, A. Jhingan, J. Gehlot, R. K. Karn , B. Kumar and H. Singh
13.	National Workshop on Radiation- A tool for Research in Physical, Chemical and Life Sciences”	UGC-DAE Consortium For Scientific Research, Kolkata Centre, at Central University of Jharkand, Ranchi.	February 13-15, 2013	National	High Resolution Measurement of 1s2s 3S1 – 1s2 1S0 (M1) Transition Energy of He-like Fe by Multi Channel Doppler Tuned Spectrometer Ranjeet K Karn , C N Mishra and T K Nandi, oral presentation

14.	DAE-BRNS Symposium on Atomic, Molecular and Optical Physics, 2012	IISER Kolkata.	December 14-17, 2012	National	High Resolution Measurement of M1 and M2 Transition Energies of He-like Fe by Multi Channel Doppler Tuned Spectrometer R K Karn , C. N Mishra, C P Safvan and T Nandi
15.	DAE-NCAMP (XVII)	IUAC New Delhi	10-13 Feb. 2009	National	Development of Multichannel Doppler Tuned Beam-Foil X-Ray Absorption Spectrometer at IUAC by Ranjeet K Karn , Nissar Ahmad, Anjan Dutta, C P Safvan, T Nandi and A Roy
16.	XVI National Conference on Atomic and Molecular Physics	TIFR, Mumbai.	8-11 January 2007	National	Experimental evidence of spin flipping in ion-solid collisions T. Nandi, Nissar Ahmad, and Ranjeet K Karn ,
17.	XVI National Conference on Atomic and Molecular Physics	TIFR, Mumbai.	8-11 January 2007	National	Development of Doppler Tuned Beam-Foil Time of Flight X-Ray Absorption Spectrometer at IUAC Ranjeet K. Karn , Nissar Ahmad, Anjan Dutta, C. P. Safvan, T. Nandi1 and A. Roy,
18.	7 th Asian International Seminar on Atomic and Molecular Physics	IIT Madras	4 th to 7 th December, 2006	International	Experimental Signature on Selective high-lying Ryberg states: A possible origin of Radio recombination lines in interstellar spaces by Nissar Ahmad, Tapan Nandi and Ranjeet K. Karn poster presentation
19.	7 th Asian International Seminar on Atomic and Molecular Physics	IIT Madras.	4 th to 7 th December, 2006	International	Development of Doppler Tuned Beam-Foil X-Ray Absorption Spectrometer by Ranjeet K. Karn , Nissar Ahmad, Anjan Dutta, C. P. Safvan, T. Nandi and A. Roy, poster presentation held on 4 th to 7 th December, 2006
20.	2 nd International Conference on Current developments in	Dept. Of Physics and Astrophysics, University of		International	Experimental Evidence on intrashell transition in Ti ²⁰⁺ by Nissar Ahmad, Ranjeet K. Karn and T. Nandi. poster

	Atomic, Molecular and Optical Physics (CDAMOP 2006)	Delhi, Delhi.			presentation
21.	XV National Conference on Atomic & Molecular Physics,	Physical Research Laboratory	Dec. 20-23-24, 2004.	National	Development of Doppler Tuned Spectrometer by Ranjeet K. Karn , Nissar Ahmad, Rashmi Arya, Rewa Ram and T. Nandi, poster presentation Dec. 20-23-24, 2004.
22.	8 th Workshop on Fast Ion – Atom Collisions	Debrecen, Hungary	September 1-3, 2004.	International	Experimental Evidence of Ternary Recombination by Nissar Ahmad, Ranjeet K. Karn , and T. Nandi oral presentation in on at held on

Articles in IUAC Annual Reports:

1. Experimental evidence on intrashell transition in He-like Ti by T. Nandi, Nissar Ahmad and **Ranjeet K. Karn** published in **annual report 2003-04, Nuclear Science Centre.**
2. Physics with Nascent Atoms: Experimental Evidence of Ternary Recombinations by T. Nandi, Nissar Ahmad and **Ranjeet K. Karn** published in **annual report 2003-04, Nuclear Science Centre.**
3. Status of LIBR Beam Line for Beam-Foil Experiments: Nissar Ahmad, **Ranjeet K. Karn** and T. Nandi published in **annual report 2003-04, Nuclear Science Centre.**
4. Formation of non-statistical Rydberg state for 164 MeV bare Fe ions colliding with Carbon-foil by Nissar Ahmad, **Ranjeet K. Karn** and T. Nandi in **annual report 2004-2005.**
5. Status of Atomic Physics Beam Line by P. Barua, R. Ram, A. Kothari, Nissar Ahmad, **Ranjeet Karn** and T. Nandi in **annual report 2004-2005.**
6. Development of DTS setup in GPSC by **Ranjeet Karn**, Nissar Ahmad, Rewa Ram and T. Nandi in annual report 2004-2005.
7. Effect of hyperfine splitting on K X-ray production cross section by B. P. Mohanty, P. Balouria, **R. K. Karn**, N. Ahmad, M. L. Garg, D. K. Avasthi, V. K. Mittal, I. M. Govil and T. Nandi in annual report 2005-2006.
8. One Dimensional Position Sensitive Proportional Counter for DTS setup by **Ranjeet K Karn**, Nissar Ahmad, Anjan Dutta, C. P. Safvan, A. Roy and T. K. Nandi in annual report 2006-2007.
9. Experimental signature on selective high-lying Rydberg states: A possible origin of Radio Recombination lines in interstellar medium by T. Nandi, Nissar Ahmad and **Ranjeet K. Karn** in annual report 2006-2007.
10. A novel cascade model to explain the cusp structure in the decay curve by T. Nandi and **Ranjeet K. Karn** in annual report 2006-2007.
11. A novel technique to study atomic processes using projectile like nuclear reaction products by T. Nandi, Nissar Ahmad and **Ranjeet K. Karn** in annual report 2006-2007.
12. Three Body Recombination: a new electron-ion recombination process in ion-solid collisions by T. Nandi and **Ranjeet K. Karn** in annual report 2006-2007.

Research Projects (Major/Minor Grants)

Sl. No.	Title	Funding Agency	Status
1.	Study of Charge exchange phenomenon in Ion-Solid Collision (Project No. IUAC – 72206, July 2022)	Inter University Accelerator Centre, New Delhi	Just Approved (20/07/2022)
2.	Beam Foil Spectroscopy of various charge states of Fe & Ni relevant to Astrophysics (Project No. IUAC – 70231, July 2021)	Inter University Accelerator Centre, New Delhi	Ongoing (27/07/2021)
3.	Molecular Fragmentation studies of Amino Acid Glycine (Project No. IUAC - 65508)	Inter University Accelerator Centre, New Delhi	Ongoing (28/12/2019)
4.	Beam-foil spectroscopy of Highly Charged Ions relevant to X-Ray Astronomy (Project No. IUAC - 62338)	Inter University Accelerator Centre, New Delhi	Ongoing (11/08/2017)
5.	Lifetime Measurement of Levels of Highly Charged Ions Relevant to Astrophysics Project No. IUAC – 53218	Inter University Accelerator Centre, New Delhi	Completed
6.	Investigating change in the stoichiometry of InP patterned surfaces using synchrotron light as co-PI Project No.: DST-20150322	DST & Indo-Italian PAC	completed

Major Contribution to the Field

Plays pivotal role in the design & development of two accelerator based national facilities for the high-resolution transition energies and lifetime measurement of Highly charged Ions:

1. Beam-single and Beam-two foil setup

2. Multi-Channel Doppler Tuned Spectrometer setup at IUAC

These setups are available as national facilities at Inter-University Accelerator Centre, New Delhi (<http://iuac.res.in/atomic-physics>). Various groups of different universities and institutions across India are using these facilities. These works have been published in **Review of Scientific Instrumentation** (see the publication list).

Abroad Visit

Visited **Elettra Sincrotrone Trieste, Italy** for experiment from 13 to 24 November, 2015 with the funding from **DST, India & Ino-Italian PAC**.

Administrative Experience

1. Training & Placement Officer, Janmshedpur Co-operative College, Jamshedpur
2. Coordinator, B. Sc. (IT), Janmshedpur Co-operative College, Jamshedpur
3. Head, Department of Physics, K. S. College, Seraikella
4. Coordinator, NAAC, K S. College, Seraikella
5. Training & Placement Officer, Kolhan University, Chaibasa
6. In-Charge, Virtual & E-Classroom, Kolhan University, Chaibasa
7. In-Charge, Training & Placement Cell, Kolhan University, Chaibasa
8. Director, Internal Quality Assurance Cell, Kolhan University, Chaibasa
9. Coordinator, Central Library Committee, Kolhan University, Chaibasa
10. NEP coordinator, Kolhan University, Chaibasa
11. Director, R & D Cell, Kolhan University, Chaibasa

Refresher / Orientation / Short Term Course:	
1.	Participated in online workshop on Simulation Method in Scientific Computing conducted by IIT Kharagpur during June 14-16, 2021 by IIT Kharagpur
2.	Attended one-week national training program on “ Advance Material Characterization & Techniques ” at Faculty Development Centre of MHRD, at IIT-ISM Dhanbad during 19-24 March 2018 .
3.	Attended the Science Academies Refresher Course in “ Material Preparation & Measurement of Its properties ” during 01-15 September 2017 at Indian Academy of Science, Bangalore .
4.	Participated in TEQIP Sponsored one-week short term course on “ Nonlinear Dynamics, Chaos & Application ” during 11-15, July 2016 , at NIT Durgapur .
5.	Science Academies' Refresher course in “ Statistical Physics ” at Homi Bhabha Centre for Science Education, Tata Institute of Fundamental Research, Mumbai during 6-19, November 2013 .
6.	Attended one week Training program on “ Computer Interfaced Science Experiments ” conducted by Inter University Accelerator Centre, new Delhi during 15-20, Oct. 2012 .
7.	Participated in the 61st Orientation Program at UGC-ASC, Ranchi University, Ranchi during Nov-25 to Dec. - 22, 2010 .
8.	Attended the “ Workshop on Quantum Computers ” held at School of Physical Sciences, Jawaharlal Nehru University, New Delhi from 10-15 March, 2005 .
Awards and Distinctions	
	Awarded DTS JRF & SRF at IUAC, New Delhi from Nov. 2003 to May-2007.
Association With Professional Bodies	
	Life Member, Indian Society for Atomic and Molecular Physics (ISAMP)
Other Activities	
	An active member of Atomic Physics Group of IUAC, New Delhi.

Place: **Jamshedpur**

Date: Aug.-14, 2023

Signature

Name: **Ranjeet Kumar Karn**

Designation: **Asst. Professor**

Department: **Department of Physics,**
Jamshedpur Cooperative College, Jamshedpur