

Department of Physical Sciences

About the Department

The Department offers **Postgraduate** and **Research program in Physics**. The Department has well equipped laboratories, which allows students to explore a variety of experiments, thereby helping them in understanding the fundamental aspects of the subject. A list of advanced elective courses in the Department offer a glimpse in the frontier areas of research and allow students to select a topic for one-year research project. The faculty in the Department is highly talented and motivated. The faculty uses latest technology and innovative methods for teaching. Faculty members are encouraged to participate in the National and International conferences/workshops to update themselves in line with the latest developments in their research area and field of specialization.

Faculty Details

S. No.	Name of Faculty	Specialization
1.	Dr. Amit Sarin, Associate Professor & Head	Renewable Energy & Materials Science
2.	Dr. Hitesh Sharma, Assistant Professor	Condensed Matter Physics
3.	Dr. Maninder Kaur, Assistant Professor	Experimental Nuclear Physics (Reactions)
4.	Dr. Varinderjit Singh, Assistant Professor	Experimental Nuclear Physics (Reactions)

Dr. Amit Sarin is in teaching profession since 2002, he has more than 15 years of teaching and research experience. Presently he is working as Associate Professor and Head, Department of Physical Sciences at IKG Punjab Technical University, Main Campus, Kapurthala.

Till date, Dr. Sarin has authored more than 15 books with National and International publishers like Royal Society of Chemistry, UK and Wiley. He is also working on a book as Editor to be published by renowned publishing house “Springer” and also edited one book published by ATINER, Greece. He has published more than 50 research papers in high impact factors journals of Elsevier, Springer, ACS and in conferences. One of his research papers was among the top 25 research papers of journal “Energy” (impact factor about 4.5) of Elsevier. The same paper has been cited in Scopus almost 120 times till date. He has h index of 9 and i-10 index of 9 till date. He is also in the reviewer board of journals of Elsevier, Springer, RSC and ACS. He has also reviewed the books of Pearson and Wiley.

In 2012, he got the research project worth Rs. 27 Lac under the scheme of Young Scientist from Science & Engineering Research Board (Government of India Enterprise), New Delhi to do research in the field of biodiesel. In future, he wants to explore more research opportunities in the field of renewable energy.

Dr. Hitesh Sharma is Assistant Professor in Physics at Department of Physical Sciences, IKG Punjab Technical University. He has teaching experience of 13 years. He has published 2 books, 55 research papers in leading SCI journals and participated more than 50 National / international conferences / workshops. His areas of interest are Material science, Nano-magnetism, hydrogen storage and gas sensors. He has delivered invited lectures in more than 20 workshops / seminars /

schools. . He was awarded Young Scientist Award 2012 by DST, New Delhi. He has completed research projects with research grants worth more than 45 Lakh from Department of Science and Technology and CSIR, New Delhi. He has supervised 3 PhD & 6 MPhil / MTech thesis and at present 5 PhD students are currently working his guidance. He is on panel of experts in leading international journals and member of board of studies in Physics, IKGPTU. He has contributed in the management of institution/university in different administrative capacities.

Dr. Maninder Kaur has done her Post Graduation in Physics from Panjab University, Chandigarh. She has qualified the National Eligibility Test (NET) in Physical Sciences in 2009. She started her research career in Experimental Nuclear Physics from Department of Physics, Panjab University, Chandigarh and obtained her Doctorate degree in 2015. Her research interest is mainly focused on the fusion dynamics of heavy ion induced nuclear reactions. The experimental work of her Ph.D. was done at Inter University Accelerator Centre (IUAC), New Delhi. She has also expertise in different theoretical codes of nuclear reactions. She is doing research in collaboration with Panjab University, Chandigarh; IUAC, New Delhi; BARC, Mumbai; VECC, Kolkata, INFN, Italy; University of Surrey, United Kingdom; SGGSWU, Fatehgarh Sahib. She won the “Best poster award” in Nucleus-Nucleus 2015 (NN2015) International conference held in Catania, Italy from June 21-26, 2015 which covered diverse fields in Nuclear/Particle physics and had about 350 participants. In 2015, she got a three year research project worth 10 lacs from IUAC, New Delhi. Besides this, she has also presented her research work through invited talks at International and National level.

Along with research she has a teaching experience of two years and six months. In future, she is planning to be active in research focusing on the role of dissipation in fusion reactions.

Dr. Varinderjit Singh has done his Post Graduation in Physics from Panjab University, Chandigarh. He has qualified the CSIR-NET in Physical Sciences in 2007 and was awarded the Shyama Prasad Mukherjee Fellowship, which is the highest ranked fellowship granted by Government of India. He started his research career in Experimental Nuclear Physics from Department of Physics, Panjab University, Chandigarh and obtained his Doctorate degree in 2013. He did his Post-Doctorate from GSI, Germany and then from Indiana University, USA. His research interest is mainly focused on the fusion-fission dynamics of heavy ion induced nuclear reactions, fusion dynamics of neutron-rich light nuclei and detector development. The experimental work of his Ph.D. was done at Inter University Accelerator Centre (IUAC), New Delhi and during post-doctorate he performed experiments at Florida state University and National Super Conducting Cyclotron Lab, MSU. He is doing research in collaboration with Panjab University, Chandigarh; IUAC, New Delhi; BARC, Mumbai; VECC, Kolkata; Indiana University, USA; GSI, Germany; Florida State University, USA; Michigan State University, USA; GANIL, France; SGGSWU, Fatehgarh Sahib. He has two Research Projects sanctioned by IUAC, New Delhi. He has been invited by various International/National institutes for presenting his research work.

Along with research he has a teaching experience of one year. Currently he is working for development of Micro-channel Plate detectors and planning to start a program to study the fusion of neutron rich nuclei.

Achievements of Department

All the faculty members of the department are PhD. Faculty members have research publications in journals of high repute and high impact factors. The Department conducts research in many frontier areas like Theoretical Solid State Physics, Advanced Theoretical and Computational Physics for investigating structural, Electronics and Magnetic properties of Nano Materials. Department has major thrust areas of research in Solid State Physics, Computational Physics, Spintronics, Hydrogen Storage Materials, High Density Energy Materials, Carbon Nano Materials, Renewable Energy and Experimental Nuclear Physics. The faculty have been awarded research projects by Department of Science and Technology, Inter-University Accelerator Center and Council of Scientific & Industrial Research.

Courses Offered

S. No.	Courses Offered	Eligibility Criteria	Intake
1.	M.Sc. (Physics)	B.Sc. with 50% marks with Physics as one of the subjects (45% in case of candidates belonging to SC / ST category)	25
2.	PhD	Master's degree or a professional degree declared equivalent to the Master's degree by the corresponding statutory regulatory body, or an equivalent degree from a foreign educational Institution accredited by an Assessment and Accreditation Agency which is approved, recognized or authorized by an authority, established or incorporated under a law in its home country or any other statutory authority in that country for the purpose of assessing, accrediting or assuring quality and standards of educational institutions.	

Infrastructure

Post Graduation Laboratories: The department has well equipped laboratories to conduct experiments in the following fields:

- Condensed Matter Physics
- Nuclear Physics
- Atomic and Molecular Physics
- Computational Physics
- Advanced Electronics

Research Laboratories: Computational Simulation Laboratory equipped with 3 powerful workstations and 3 computers of high configuration for theoretical studies simulations in diverse areas of Physics.

Fee Structure

Sr. No.	Content	1 st Semester	2 nd Semester	3 rd Semester	4 th Semester
1	Admission Fee	1,000/-	-	-	-
2	Tuition Fee	15,500/-	15,500/-	15,500/-	15,500/-
3	Development Fund	1,250/-	1,250/-	1,250/-	1,250/-
4	Securities (Refundable)	5,000/-	-	-	-
5	Other Fee	1,975/-	1,975/-	1,975/-	1,975/-
6	University Related Fee	1,150/-		1,150/-	
	Total Fee	25,875/-	18,725/-	19,875/-	18,725/-

Note:

* Examination Fee of Rs. 700/- will be charged per semester in addition to above mentioned fee.