

National Symposium on Gaseous Discharges (NSGD-2023)

(August 9-11, 2023)

About NSGD-2023

The National Symposium on Gaseous Discharges (NSGD-2023) is organized by the Department of Physics, Pondicherry University from 9-11 August, 2023 to encourage the advancement of the science and application of discharges by the exchange of scientific information. Further, the power sources are an integral part of electric discharges and require equal attention. Thus, the scope of this symposium includes ongoing topical research on discharges and power sources with a particular focus on energy generation and storage, pollution control, new materials, surface modification, and innovative applications. This symposium will host interdisciplinary meetings for the exchange of results, presentation of progress, and discussion of ideas and challenges for the future in the field of discharges. Both fundamental and applied aspects are covered. The Symposia program consists of plenary talks, invited talks, invited oral contributions, and posters. Mini-courses, special focused sessions highlighting the contribution of a group or a scientist, and informal discussions on relevant topics may also be offered in addition to the regular symposium schedule. Participants from different disciplines such as Physics, Plasma Physics, Chemistry, Energy, Renewable Energy, Green Technologies, Electrical Engineering, Electronics and Instrumentation, Mechanical Engineering, Material Processing, Material Science and Engineering, and Fluid Dynamics are invited to contribute.

Electrical Discharges

An electric discharge is generally referred to the flow of electric current through a non-conducting medium such as a gas. The earliest mention of the divine powers of electric discharges is found in Rigveda as VAJRA. The **Vajra** (वेज्र) the 'thunderbolt' is a legendary and ritual weapon symbolizing the properties of indestructibility and an irresistible force. An electrical breakdown initiates flow charge carriers leading to electrical discharges. Electromagnetism and hence electric discharges play a very important role in human development. Electric discharges can be found in common applications such as in light sources to advanced applications such as He-Ne laser, plasma TV, chip fabrication, waste management, and material processing to fusion machines. A few innovative uses of electric discharge are also drawing attention such as the treatment of skin diseases and food processing.

Scientific programme

The scientific programme of the symposium is spread over three days (August 9-11, 2023) comprising invited and oral contributions, posters, mini-courses, hands-on training, highlights of the contribution of a group or a scientist and brainstorming sessions on following specific topics.

A. BREAKDOWN PHYSICS AND EXPERIMENTS

- A1. Dielectric barrier discharge, Streamer discharge
- A2. Corona discharge, Spark discharge
- A3. DC glow discharge, Pulsed DC glow discharge
- A4. Electric arc, Capillary discharge
- A5. Laser induced breakdown
- A6. Vacuum arc, Spark discharge
- A7. Double discharges and double layers
- A8. RF, ECR, ICP, PECVD, Magnetron discharges
- A9. Space & Solar plasma, Ultra low density plasma
- A10. Lightning, St. Elmo's fire, Fire ball
- A11. High energy density discharges

B. PHYSICS, ENGINEERING AND COMPUTER MODELING

- B1. Switching in vacuum and related phenomena
- B2. Interaction of vacuum arcs with magnetic fields
- B3. Vacuum arc physics, circuit breakers, Flash light
- B4. Computational Plasma Physics, Fluid Dynamics
- B5. Pulsed power physics and technology
- B6. Laser Plasma Interaction, Chaos Computing

C. APPLICATIONS

- C1. Vacuum interrupters and their applications
- C2. Surface modification, Polymerization, thin film coatings
- C3. Electron, ion, neutron, X-ray, light sources
- C4. Accelerators and fusion reactor related issues
- C5. Plasma cosmology, Space plasmas
- C6. Complex plasmas and nonlinear dynamics
- C7. Ion Beams, Material Processing, Pulsed Laser Deposition
- C8. Meta-materials and Nanomaterials
- C9. Chip fabrication, Vacuum electron devices
- C10. Waste treatment and waste to energy
- C11. Defense applications, Stealth and Radar Technologies
- C12. Plasma Activated Water, Food and agriculture

Department of Physics, Pondicherry University

The main campus of the University has a sprawling area of 780 acres spread on the western side of the East Coast Road. The land gently rolls down to the beaches and is interspersed with lovely woods. Cut by a picturesque and deep ravine, this idyllic campus is on the fast-track to developing into an ideal nurturing ground for innovation and creativity. The University is fully supported by the University Grants Commission. The University is a member of the Association of Indian Universities and the Association of Commonwealth Universities. The teaching faculty consists of more than 400 active and erudite members in different Schools, Departments and Centres. Currently, there are around 6000 students pursuing their post-graduate and doctoral programmes on the campus.

The Department of Physics came into existence in June 1987. The department offers two year M.Sc. programme, five years Integrated M.Sc programme (with specialization in Lasers, Condensed Matter Physics and Electronics), integrated PhD and PhD programmes. The department has been recognized for special funding by DST-FIST and UGC – SAP. The faculty members are involved actively in research areas viz. material science: magnetic, dielectric, electronic, photonic and nanomaterials; solid state ionics, spectroscopy and transport studies; non-linear dynamics, fiber optics, non-linear optics and semiconductor lasers; computational physics, biophysics, statistical mechanics, plasma physics, atomic physics, quantum field theory, multiferroics, spintronics, ion-beam and acoustic physics.

How to reach Puducherry

One can reach Pondicherry University by Bus/Car/Train/Air.

Bus Route: Chennai airport and railway station are connected to CHENNAI MOFUSSIL BUS TERMINAL (officially known as Puratchi Thalaivar Dr. M.G.R. Bus Terminus) at Koyambedu, main bus station by metro. From this bus station, there is a bus service to Pondicherry University for every 10 minutes via scenic East Coast Road (ECR). If you catch the **ECR buses**, it stops just near the University gate (**Gate No-2**). The bus fare is around Rs.180.

Car Route: Car fare from Chennai airport/Railway station is around Rs. 2500. Organizers may arrange cab on prior request.

Direct Trains: NDLS PDY SF express; MS PDY Express; BDS PDYS SF; MAQ PDY Express; Puducherry Express; YPR PDY SPL; HWH PDY SPL.

Connecting (Air) Flights: Pondicherry is connected by Air via Bengaluru and Hyderabad.

Awards (NSGD-2023)

Best three contributions in each session will be awarded with certificate of excellence and cash prize.

Paper Submission & Pre-Registration

Scientists/Researchers/Students desirous of participating in this symposium are requested to submit the four-page manuscript & pre-register ONLINE positively by **June 25, 2023**. The participants may register by paying registration fee on or before **July 25, 2023**. Please indicate your subject category while submitting the manuscript. The details of Latex style file and template will be available soon (**April 30, 2023**) on web page <http://NSGD-2023.pondiuni.edu.in>. The manuscript submission is mandatory for plenary, invited, oral, and poster presentations.

Pre-Registration link: <https://forms.gle/HRPirxCHQF2Z7Vjm8>.

Proceedings

Proceedings with ISBN/ISSN will be published and distributed during the symposium. All the manuscripts will undergo a preliminary quality check followed by a review. All accepted contributions will be published in the proceeding. This practice is being followed to satisfy UGC norms for publication credit to the participants. The manuscript published in this proceeding may be accounted for Academic Performance Index (API) scoring equivalent to refereed journal publication. Further information will be provided in the second announcement.

Registrations Fee

All delegates including chairperson, invited speakers, scholars and students are required to register for the Symposium (**On or before June 25, 2023**) by paying ₹ 1000/- (Rupees Five hundred only). After deadline, registration will be allowed till August 9, 2023, however, ₹ 5000/- (Rupees Five Thousand Only) registration fee will be charged. No fee waiver request will be entertained except for the participants from sponsoring institutions and organizations. Food, conference dinner & conference kit will be provided to all participants.

Important dates

March 30, 2023	: 1st Announcement
June 25, 2023	: Deadline for four-page manuscript submission
July 25, 2023	: Last date for registration fee payment
July 25, 2023	: Acceptance/Non-Acceptance of the manuscript
July 30, 2023	: Announcement of final program
August 9-11, 2023	: Symposium

Note: "The participants who would like to go for sightseeing are advised to plan on their own in advance after the symposium during the extended weekend up to Independence Day".

Financial Support

Financial support towards travel and registration fee may be considered for all research scholars /junior faculty members (ONLY FOR PARTICIPANTS THOSE HAVE PAID THE REGISTRATION FEE). However, it will be subjected to availability of funds. For further information regarding the symposium or financial support, participants may contact the organizer.

Transaction Information

All payments should be made in favour of **NSGD-2023, Indian Bank, Pondicherry University Branch, Puducherry - 605014**. Account details of **NSGD-2023** for payment of registration fee etc. are as follows

1. Name of Account : **NSGD-2023**
2. **NSGD-2023** Bank Accounts Number : **7491614396**
3. **IFSC Code** : **IDIB000P152**
4. **NSGD-2023** Bank Accounts Type : **Current Account Type**

Contact Details

The Convener,
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Ph.: 0413-265408/ 9486803042/
E-mail: NSGD2023@gmail.com

Webpage: WILL BE AVAILABLE BY APRIL 20, 2023

National Advisory Committee

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S. Yugeswaran	Pondicherry University	Member
Pralay K Karmakar	Tezpur University	Member
A K Srivastava	B.I.T. Jaipur	Member
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Swarniv Chandra	GGDC, Kushmandi	Member
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Alok Sharan	Member	S. Yugeswaran	Member

Tentative List of Speakers

Padmshree Prof. P.I. John (Rtd.), Former IAEA Chairman (Kottayam)
Prof. Shashank Chaturvedi, IPR (Gandhinagar)
Prof. N S Saini, GNDU (Amritsar)
Prof. Ramesh Narayanan, IIT, Delhi
Dr. Vipin Kumar, (SPL-VSSC, ISRO), Thruvanantapuram
Prof. Vinod Krishnan, IAAP (Bengaluru)
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Prof. Ramachandran (BU), Coimbatore
Prof. Rajneesh Kumar, BHU, (Bararas)
Dr. D.N. Gupta, DU (Delhi)
Prof. Ram Prjapati, JNU, (Delhi)
Dr. M. Kundu, IPR (Gandhinagar)
Dr. S.T. Aruna, CSIR-NAL (Bengaluru)
Dr. Devendra Sharma, IPR (Gandhinagar)
Dr. Saravanan, Sikkim Manipal University, Gangtok
Prof. S. Mukherjee, (LIGO-India), IPR (Gandhinagar)
Dr. K. Jaysankar, CSIR- NIIST (Thiruvananthapuram)
P. Bharathi, IPR, Gandhinagar
Prof. Swati Dubey, S. S. in Physics, Vikram University, Ujjain
Dr. Archana Lakhani, DAE-UGC Consortium, Indore
Dr. S.K. Gupta, FCIPT, IPR (Gandhinagar)
Dr. Utpal Deka, Sikkim Manipal University, Gangtok



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Organized

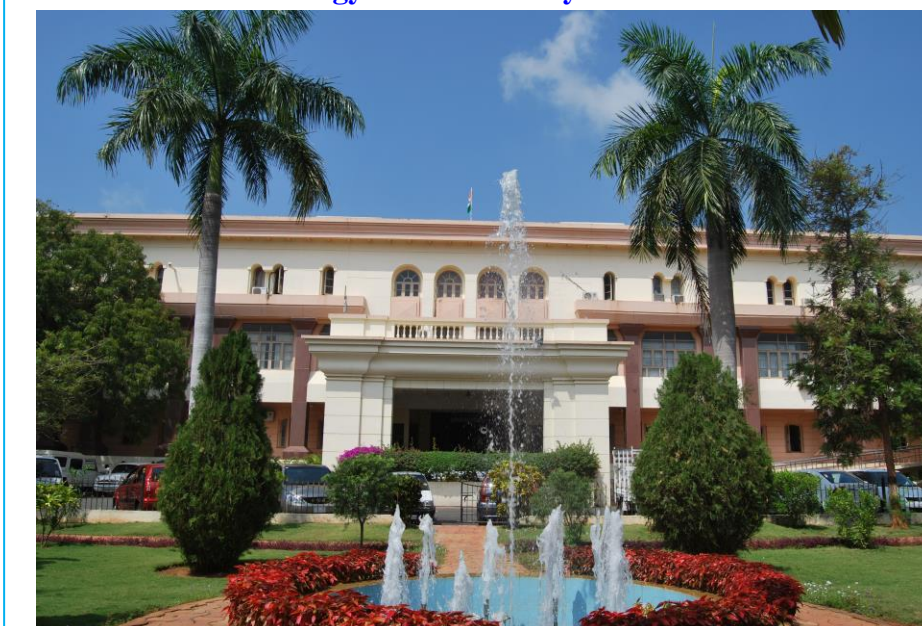
by

Department of Physics

Pondicherry University, Puducherry-605014, INDIA

In Association with

Energy Science Society of India



FIRST ANNOUNCEMENT AND CALL FOR PAPERS