Atul Kumar

Computational Physicist

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Bio

I am Atul Kumar, a plasma physicist with over a decade of experience specializing in plasma-material interactions (PMI), plasma transport in magnetic confinement fusion (MCF) devices, and computational plasma physics. My research plays a pivotal role in advancing fusion energy by addressing key challenges related to plasma confinement, plasma-facing material durability, and impurity transport—critical factors for achieving sustainable and clean energy solutions. Beyond MCF, my expertise spans laser-driven inertial confinement fusion, space plasma physics, and dusty plasmas. I have worked on laser-plasma interactions for high-energy particle acceleration, developed plasma-based detection methods for space debris tracking, and investigated fundamental plasma instabilities that govern both laboratory and astrophysical plasmas. My work is deeply rooted in computational modeling and high-performance computing, focusing on hybrid kinetic-fluid simulations, plasma turbulence, and RF heating in fusion plasmas. I have developed state-of-the-art numerical frameworks and diagnostic tools to study plasma behavior under fusion-relevant conditions, advancing plasma-material interaction models and optimizing plasma transport mechanisms. The computational tools I have designed are now widely applied in major experimental fusion facilities. In addition to leading large-scale simulation efforts, I collaborate extensively with experimental research teams in the U.S. and internationally, ensuring that theoretical insights translate into practical advancements in fusion energy development. My work bridges modeling and experimental validation, directly contributing to the optimization of next-generation fusion reactors.

Job Experience

October 2022–present — **Computational Physicist: R&D Associate Staff**, *Plasma Theory and Modeling Group, Fusion Energy Division (FED)*, FFESD, Oak Ridge National Laboratory, Oak Ridge, TN.

February 2020–September 2022 — **Postdoctoral Research Associate in Computational Plasma Physics**, *Plasma Theory and Modeling Group, Fusion Energy Division (FED)*, FFESD, Oak Ridge National Laboratory, Oak Ridge, TN.

January 2019–February 2020 — **Postdoctoral Fellow in Computational Plasma Physics**, *Basic Theory and Simulation Division, Institute for Plasma Research*, Gandhinagar, India.

Education

2013–2019 — **Ph.D. in Plasma Physics**, *Homi Bhabha National Institute-Institute for Plasma Research*, Gandhinagar, India.

2010–2012 — **M.Sc. (Master in Science) in Physics**, *University of Delhi*, Delhi, India.

2007–2010 — **B.Sc.(Hons.) (Bachelor in Science) in Physics**, *University of Delhi*, Delhi, India.

Academic Achievements

JEST 2013	**National Rank-145**, *Joint Entrance Screening Test (JEST) 2013*, India.
Ph.D. Coursework	**Rank One**, *Institute for Plasma Research*, Gandhinagar , India.
B. Sc. (Hons.) Physics	**Rank One**, *Shivaji College, University of Delhi*, Delhi , India.
12^{th}	**Rank One**, *Jawahar Navodaya Vidyalaya*, Gaya, Bihar, India.
10^{th}	**Rank One**, *Jawahar Navodaya Vidyalaya*, Gaya, Bihar, India.

Awards/Recognitions

* Junior Research Fellowship (2013-15), Department of Atomic Energy,Govt. of India, India
* Senior Research Fellowship (2015-19), Department of Atomic Energy,Govt. of India, India
* IOP Trusted Reviewer, Institute of Physics (IoP) Publishing.

Press Releases

* "Understanding and Mitigating Density Drop in MPEX During ICRH," featured in February 2025 Monthly Highlights for the Fusion Energy Sciences (FES), Office of Science, U.S. Department of Energy.
* "Integrated models explore control of impurity transport in PISCES-RF," featured in February 2025 Monthly Highlights for the Fusion Energy Sciences (FES), Office of Science, U.S. Department of Energy.
* "Understanding density-drop observed in MPEX during RF based ICH", featured in January 2023, Monthly highlights to FES, Office of Science, US Department of Energy
* "Magnetic field with an edge!"@Physics.org (https://phys.org/news/2020-09-magnetic-field-edge.html).
* "Magnetic field with an edge!"@Eurekalert(https://www.eurekalert.org).

Professional Activities

Conference organiser/session chair

* Member- Organising Committee, International Symposium on Fusion Nuclear Technology, 2025.
* Session chair (Fusion-General), American Nuclear Society (ANS) Annual Conference 2024, June 16-19, 2024, Las Vegas, NV.
* Session chair (RF Physics), US-Japan Workshop 2024, February 20-22, 2024, San Diego, CA
* Member- scientific organising committee, Hands-on-school on Nonlinear Dynamics (HSNLD) 2015, India.
* Lectures on Inertial Confinement Fusion, Summer School Program (SSP)-2019, Institute for Plasma Research, Gujarat, India.

Mentorship

* Co-Mentored US DoE funded summer intern, 2024
* Mentored US DoE funded SULI spring intern, 2024
* Mentored US DoE funded SULI fall intern, 2023
* Career Mentor, American Physical Society-Graduate School & Careers Day, April 27, 2024

* Career Mentor, American Physical Society-Division of Plasma Physics (APP-DPP), October 30-November 3, 2023. Denver, CO.
* Career Mentor, American Physical Society-Division of Plasma Physics (APP-DPP), October 17-21, 2022, Spokane, WA.

Reviews to Scientific Journals/ Technical Reports

* Scientific reports, Nature.
* Physics of Plasmas, American Institute of Physics (AIP).
* Physica Scripta,Institute of Physics (IoP).
* Review of Scientific Instruments, American Institute of Physics (AIP).
* Fusion Science and Technology, American Nuclear Society (ANS).
* Contribution to Plasma Physics; WILEY-VCH.
* Advances in Space Research, ELSEVIER, Science Direct.
* Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, ELSEVIER, Science Direct.
* Pramana-Journal of Physics, Springer.
* US Department of Energy INFUSE proposals.
* US Department of Energy Early Carrier Award proposals.
* ORNL's Lab directed funding proposals.

Membership/Affiliation

2017-Present American Physical Society (APS)

2022-Present American Nuclear Society (ANS)

2018-Present (Life Member) Association of Asia-Pacific Physical Societies-Division of Plasma Physics (AAPPS-DPP)

2013-Present (Life Member) Plasma Science Society of India (PSSI)

Project Leadership

* Principle Investigator(FY 2023)- Sputtering calculation for ITER Ion Cyclotron Radio-frequency (ICRF) Antenna, US ITER, US Department of Energy
* ORNL Principle Investigator(FY 2023-24)- "RF capability team" funded by the Advanced Research Projects Agency-Energy (ARPA-E), US Department of Energy
* Co-investigator(FY 2022)- "R&D plan for mitigating the risks related to impurity production and transport in MPEX", ORNL Notable Outcome, US Department of Energy

Technical Skills

Professional skills

* **Analytical Skills:** Very good analytical skills related to magnetic fusion, laser/beam-plasma interactions and complex plasmas
* **Parallel Programming:** Very good experience in parallel programming in Object-Oriented C++ and FORTRAN using MPI and openMP.
* **GitHub Version control (username: atulkumar19):** Experienced in managing 'GitHub version control protocol' for collaboration and developments of various parallel codes: PRO++OMG, PICOS++, GITR, OSIRIS and several other post-processing tools.

* **Impurity transport modeling:** Using a GPU based 3D Monte-Carlo particle tracker Impurity transport code-GITR to study impurity transport in linear and toroidal magnetic confinement fusion devices.
* **Hybrid PIC simulation:** Developed a parallel (MPI+openMP), object-oriented C++ based, full orbit (1.5D-3V) and guiding center (1.5D-2V) quasi-neutral Particle-In-Cell code-PICOS++.
* **PIC simulation:** Using massively parallel, fully relativistic, electromagnetic, 3-D Particle-in-Cell simulation (PIC) (mainly OSIRIS, EPOCH codes).
* **Fluid Simulations:** Experience in fluid simulation under LCPFCT suite of subroutines.
* **MD Simulations:** Hands on experience in Molecular Dynamics (MD) simulation using LAMMPS code.
* **Debugging & Mapping:** Skilled in parallel mapping/profiling and debugging (with 'Allinea Forge') parallel C++ codes on super-computing facilities at ORNL.
* **HPC experience:** Running large scale simulation runs on NERSC supercomputer facilities; Very good experience in working with super-computing facilities at ORNL ; workstations based on MacOS and Linux operating systems.
* **Post processing skills::** Skilled in developing various diagnostic tools based on MATLAB, VAPOR, IDL based VISXD for data visualization.
* **Simulation for experiments:** Working closely with experimental groups for global impurity transport in WEST and Alcator-CMOD Tokamaks; linear device simulation for MPEX/ProtoMPEX @ ORNL, TN; for laser-plasma interactions @ TIFR, Mumbai, India.

Computer skills

Programming Languages	Fortran77/90/95/03, C	Parallel Programming	MPI, OpenMP, Matlab parallel tools
Operating Systems	Mac, Linux, Windows	Office Softwares	Texmaker, Pages, Keynote, MS office, OpenOffice
Computational Sofwares	IDL, VISXD, Matlab, Mathematica, Vapor, Gnuplot	Drawing Tools	Inkskape, Adobe Illustrator

Advanced Simulation Methods

During my research carrier, I have significantly contributed to the development of various advanced state-of-the-art simulation/computational methods which are widely used by researchers and on several nuclear fusion facilities across the world. Some of my important contributions are listed below:

Simulated Transport of RF-Induced Impurity Production and Emission (STRIPE) Framework

Developed the STRIPE framework, a comprehensive computational toolset for modeling plasma and impurity transport under RF heating conditions. STRIPE has been applied to various fusion facilities across the world including Proto-MPEX, MPEX, WEST, DIII-D and ITER. Some of the key features and capabilities of this framework are highlighted below:

⋆ Self-consistent impurity transport modeling, integrating background plasma profiles with impurity sources from RF-enhanced plasma-wall interactions.
⋆ Coupling of multi-physics solvers, including SolEdge3x/SOLPS for background plasma transport, COMSOL and AORSA for RF sheath rectification, and GITR for impurity migration.
⋆ Advanced Monte Carlo methods to track impurity ionization states and surface redeposition dynamics.

- ⋆ Integration with synthetic diagnostics for validation with experiments.
- ⋆ Running large-scale impurity transport simulations on NERSC and ORNL supercomputing facilities.
- ⋆ Publications: (1) Kumar et. al. arXiv:2412.08748v1 [physics.plasm-ph] (2024); submitted to Nuclear Fusion; (2) W. Tierens, A. Kumar *et. al.* Nucl. Fusion, 66, 095015 (2024).

Particle-In-Cell for Open System (PICOS++) code

Developed a massively parallel, quasi-neutral Particle-In-Cell code-PICOS++ for open magnetic field systems. This code has been applied on various US DoE funder linear device experiments including Proto-MPEX, MOPEX and WHAM device. Some of the important and unique features of this code are mentioned below:

- ⋆ A volumetric particle source: (i) Isotropic and/or (ii) NBI like source and rate constraint fueling.
- ⋆ Diagnostics to estimate the particle and energy leakage from the end regions.
- ⋆ Monte-Carlo based Fokker-Plank collision operator.
- ⋆ Quasi-linear RF heating operator in synergy with NBI.
- ⋆ Running large scale simulations on NERSC supercomputer facilities.
- ⋆ Publications: (1) Kumar et. al. Plasma Phys. Control. Fusion, 2022; (2) Kumar et. al. Nucl. Fusion, 2023; (3) Kumar et. al. Phys. Plasmas, 2024 (submitted); (4) Islam et. al., Plasma Phys. Control. Fusion 67, 025002 (2025).

Global Impurity TRansport (GITR) code

Using and developing a GPU based code 3D kinetic code - GITR. This code is developed under a PSI-SciDAC project funded by US DoE and is widely used to study plasma material interactions and associated transports. Mentioned below are some of my recent research activities with the GITR code:

- ⋆ Modeling of generation of Al/Si impurities at the Helicon window in presence of RF rectified sheath and their transport up to the target in Proto-MPEX/MPEX.
- ⋆ Upgrading GITR to handle multiple impurity species and materials, and simulations of the mixed materials expected to be present in MPEX.
- ⋆ Publications: (1) Dhamale et. al., Plasma Phys. Control. Fusion, 2024; (2) Easley et. al, Phys. Plasmas, 2024; (3) Rapp et. al. IEEE Transactions of Science, 2024; (4) Kumar et. al., Nucl. Fusion 2024 (submitted); (5)Kumar et. al. arXiv:2412.08748v1 [physics.plasm-ph] (2024); submitted to Nuclear Fusion.

SOLEDGE3X-Boundary plasma fluid transport code

Using and developing a boundary plasma transport code-SOLEDGE3X. This code is most advanced boundary plasma simulation code primarily developed by CEA, France. Mentioned below are some of my recent research activities with SOLEDGE3X:

- ⋆ Modeling plasma transport in SOL region during ICRF heating in WEST tokamak
- ⋆ Optimizing SOLEDGE3X code for various other fusion devices including Proto-MPEX and DIII-D.
- ⋆ Publications: (1) Kumar et. al. arXiv:2412.08748v1 [physics.plasm-ph] (2024); submitted to Nuclear Fusion.

OSIRIS Particle-In-Cell code

Massively parallel, fully relativistic 3D Particle-in-Cell simulation code: OSIRIS is one of most widely used code in the field of plasma physics. Here are some my contribution to this code as an user and developer:

- ⋆ Member of core OSIRIS development team
- ⋆ Developed various diagnostics for OSIRIS in MATLAB and VAPOR.
- ⋆ Publications: (1) Dharodi et. al., Phys. Rev. E., 2023; (2) Kumar et. al., New J. Phys., 2020; (3) Vashistha et. al., New J. Phys., 2020; (4) Das et. al. Phys. Rev. Res., 2020; (5) Kumar et. al., Plasma Phys. Control. Fusion, 2019; (6) Shukla et. al., Plasma Phys., 2018

Fluid simulations with LCPFCT framework

- ⋆ Using 2-D fluid code under LCPFCT framework with Flux corrected finite difference scheme to study the nonlinear and relativistic lower hybrid and upper hybrid waves.
- ⋆ A 2D-finite beam plasma system has also been studied using the electromagnetic, fully relativistic fluid code under LCPFCT framework.
- ⋆ Publications: (1) Verma et. al. Phys. Plasma, 2017

Molecular Dynamic simulations with LAMMPS code.

- ⋆ Hands on experience on the massively paralleled Open source Molecular Dynamic simulation code LAMMPS to study the dynamics of strongly coupled dusty plasmas at the molecular level. The strongly coupled dust particles could be assumed interacting with Yukawa potential.

Publications

Peer-Reviewed

1) S. Islam, J. Lore, A. Kumar *et. al.* "Simulation of plasma and neutral transport in PISCES-RF using SOLPS-ITER", Plasma Physics. Control. Fusion, 67, 025002 (2025)
2) A. Kumar *et. al.* "Density drop at the divertor target in the prototype material plasma exposure eXperiment (Proto-MPEX)", Phys. Plasmas, 31, 122502 (2024)
3) W. Tierens, A. Kumar *et. al.* "Radiofrequency sheath rectification on WEST: application of the sheath-equivalent dielectric layer technique in tokamak geometry", Nucl. Fusion, 66, 095015 (2024)
4) G. Dhamale *et. al.* "Impurity transport in PISCES-RF", Plasma Phys. Control. Fusion, 66, 095015 (2024)
5) D. Easley *et. al.* "Dependence of high-Z redeposition on the field-to-surface pitch angle and other sheath parameters in tokamaks", Plasma Phys. Plasmas, 31, 052503 (2024)
6) J. Rapp *et. al.* "Research and Development to Reduce Impurity Production and Transport of the Impurities to the Target in Linear Plasma Devices Using Helicon Plasma Sources", IEEE Transactions on Plasma Science, 31, 052503 (2024)
7) G. Samolyuk *et. al.* "Crystallographic and temperature effects in low-energy collisions for plasma–material interactions", Materialia, 32, 101886 (2023)
8) Vikram Dharodi, Atul Kumar, Abhijit Sen, "Signatures of an energetic charge bunch moving in a plasma", Phys. Rev. E 107, 025207 (2023).
9) Atul Kumar and J. F. Caneses Marin, "Kinetic Simulations of collision-less plasmas in open magnetic geometries ", Plasma Phys. Control. Fusion, 64, 035012 (2022).
10) Atul Kumar and Abhijit Sen, "Precursor magneto-sonic solitons in a plasma from a moving charge bunch", New J. Phys., 22, 073057 (2020).
11) Amita Das, Atul Kumar, *et. al.*, "Boundary driven unconventional mechanism of macroscopic magnetic field generation in beam-plasma interaction", Phys. Rev. Res., 2, 033405 (2020).
12) Atul Kumar, J. F. Caneses-Marin, C. Lau and R. Goulding, "Parallel transport modeling of linear divertor simulators with fundamental ion cyclotron heating", Nucl. Fusion 63, 036004 (2023)

13) Ayushi Vashistha, Devshree Mandal, Atul Kumar, *et. al.*, "A new mechanism of direct coupling of laser energy to ions", New J. Phys., 22, 063023 (2020).

14) Atul Kumar, Chandrasekhar Shukla, Deepa Verma, Amita Das, and Predhiman Kaw, "Excitation of KdV magnetosonic solitons by a pulsed CO_2 laser in plasma in the presence of an external magnetic field", Plasma Phys. Control. Fusion, 61, 065009 (2019).

15) Atul Kumar, Amita Das, and Predhiman Kaw, "Coupling of drift wave with dust acoustic wave",Phys. Plasmas,26, 083702 (2019).

16) Atul Kumar, Chandrasekhar Shukla, Amita Das, and Predhiman Kaw, "Energy principle for excitations in plasmas with counterstreaming electron flows" , AIP Advances , (8), 055213 (2018).

17) Chandrasekhar Shukla, Atul Kumar, Amita Das, and Bhavesh Patel, "Merger and reconnection of Weibel separated relativistic electron beam", Physics of Plasma, (25), 022123 (2018).

18) Deepa Verma, Ratan Kumar Bera, Atul Kumar, Bhavesh Patel, and Amita Das, "Observation of time dependent 1-D non propagating localized laser plasma structures using fluid and PIC codes ", Physics of plasmas, (24), 123111 (2017).

Technical reports

1) J. Rapp et. al, "R&D plan for mitigating the risks related to impurity production and transport in MPEX", ORNL Notable Outcome Report 2022,US Department of Energy.

Preprints/In preparation

1) Atul Kumar et. al. "Integrated modeling of RF-Induced Tungsten Erosion at ICRH Antenna Structures in the WEST Tokamak ", arXiv:2412.08748v1 [physics.plasm-ph] (2024); submitted to Nuclear Fusion

2) Atul Kumar et. al. "Mitigation of impurity transport via electron cyclotron heating in Proto-MPEX ", In preparation.

3) Atul Kumar, Chandrasekhar Shukla, Predhiman Kaw, and Amita Das, "Fast ignition laser fusion using in-situ ion acceleration with pulsed CO_2 laser", arXiv:1804.02200v2 [physics.plasm-ph] , (2018).

Talks and Posters

Invited talks

I. Selected: Tungsten Erosion and Transport Induced by RF Sheaths at Antenna Structures in the WEST Tokamak, 25th Topical Conference on Radio-Frequency Power in Plasmas, 19-22 May 2025, Hohenkammer, Germany

II. Modeling of plasma parallel transport in the Material Plasma Exposure eXperiment (MPEX) during radio-frequency heated discharges, Sherwood Fusion Theory Conference, Knoxville, TN, USA, 08-10 May 2023.

III. Precursor magneto-sonic solitons in a plasma from a moving charged object, Conference on Plasma Simulation (CPS-2020), Gandhinagar, Gujarat, India, 23-24 January 2020.

IV. In-situ ion heating with pulsed CO_2 laser, AAPPS-DPP-2018, Kanazawa, Japan, 12-17 November 2018.

Contributed talks

* Modelling impurity generation and transport in the Prototype-Material Plasma Exposure eXperiment (Proto-MPEX) under various heating scenarios, US-Japan Workshop on RF heating physics,San Diego, February 20-24, 2024.

* Impurit transport in Proto-MPEX, American Physical Society-Division of Plasma Physics (APS-DPP 2023), WA, October 17-21, 2023.

* Modeling of global impurity transport in the Proto-Material Plasma Exposure eXperiment (Proto-MPEX) during electron and ion cyclotron heating scenarios. American Physical Society-Division of Plasma Physics (APS-DPP 2022), Spokane, WA, October 17-21, 2022.
* Hybrid Particle-In-Cell simulations for plasmas in open magnetic geometries, Sherwood Fusion Theory Conference Virtual meeting, August 16-18, 2021.
* Fokker-Plank transport modeling of RF-Heated magnetic mirrors with a Hybrid-Particle-In-Cell code. American Physical Society-Division of Plasma Physics (APS-DPP 2020), Virtual meeting, November 09-13, 2020.
* Excitation of magneto-sonic solitons with high power, pulsed CO2 laser in an over-dense gas-jet target. AAPPS-DPP-2019, Hefei, China, November 04-08, 2019.
* A new absorption mechanism for direct ion heating based of high power CO_2 laser, The multiple approaches to plasma physics from laboratory to astrophysics, Les Houches, France, May 13-24, 2019.
* In-situ Ion Heating Via A New Absorption Mechanism with pulsed CO_2 Laser in Presence of an External Magnetic Field, 33rd National Symposium on Plasma Science and Technology-Plasma-2018, Delhi, India, December 04-07, 2018.
* Magnetic field generation in finite beam plasma system, 59th Annual Meeting of APS-DPP, Milwaukee, WI, USA, October 23-27, 2017.

Posters

* Mitigation of impurity transport via ECH in the Prototype-Material Plasma Exposure eXperiment (Proto-MPEX), Sherwood Fusion Theory conference, MT, May 06-08, 2024.
* Development of an integrated modeling framework for plasma-material interaction and its application on tungsten erosion and transport from the RF antenna structures in the WEST tokamak, American Physical Society-Division of Plasma Physics (APS-DPP 2023), CO, October 30-November 03, 2023
* Interpretive modelling of impurity generation and transport during Ohmic, Lower Hybrid (LH) and Ion cyclotron radiofrequency (ICRF) heated discharges in the WEST Tokamak, 24th Topical Conference on Radio-frequency Power in Plasmas, MD, September 26-28, 2022
* Modelling of plasma parallel transport in Material Plasma Exposure eXperiment (MPEX) during ion cyclotron heating. Sherwood Fusion Theory Conference, Santa Rosa, CA, 04-06 April 2022
* Application of the Hybrid PIC code-PICOS++ to simulate plasmas in open systems. American Physical Society-Division of Plasma Physics (APS-DPP 2020), Virtual meeting, 08-12 November 2021.
* Coupling of drift wave with dust acoustic wave, 10th Asia Plasma and Fusion Association, 14-18 December 2015.
* Effect of finite beam width on the current separation in beam-plasma system: Particle-in-Cell simulations, 30th National Symposium on Plasma Science and Technology- Plasma-2015, Kolkata, West Bengal, India, 1-4 December 2015.
* Coupling of drift wave with dust acoustic wave, Turbulence, magnetic Fields, and Self Organisation in Laboratory and Astrophysical Plasmas, Les Houches, 23 March-04 April 2014.

Conferences and Schools/workshops

*) American Physical Society-Division of Plasma Physics (APS-DPP 2024), Atlanta, CO, October 7-11, 2024.

*) 2024 DIII-D Summer School, Vitrual, San Diego, June 24-28, 2024

*) Sherwood Fusion Theory Conference, MT, USA, May 06-08 2024

*) US-Japan Workshop on RF heating physics, San Diego, February 20-24, 2024.

*) 4th Computational Physics School for Fusion Research (CPS-FR 2023), Massachusetts Institute of Technology, August 21-26, 2023

*) American Physical Society-Division of Plasma Physics (APS-DPP 2023), Denver, CO, October 30-November 03, 2023.

*) Sherwood Fusion Theory Conference, Knoxville, TN, USA, May 08-10, 2023,

*) American Physical Society-Division of Plasma Physics (APS-DPP 2022), Spokane, WA, October 17-21, 2022.

*) 24th Topical Conference on Radio-frequency Power in Plasmas, MD, September 26-28, 2022

*) International Sherwood Fusion Theory Conference 2022, Santa Rosa, CA, April 04-06, 2022.

*) American Physical Society-Division of Plasma Physics (APS-DPP 2022), Spokane, WA, October 17-21, 2022.

*) ITER Plasma Scenarios and Control International School,UC San Diego,CA, July 25-29, 2022

*) International Sherwood Fusion Theory Conference 2022, Santa Rosa, CA, April 04-06, 2022.

*) American Physical Society-Division of Plasma Physics (APS-DPP 2020), Virtual meeting, virtual, November 08-12, 2021.

*) International Sherwood Fusion Theory Conference 2021, Virtual Meeting, August 16-18, 2021.

*) 28^{th} IAEA Fusion Energy Conference 2020, Virtual Meeting, May 10-15, 2021

*) 62nd Annual Meeting of APS-DPP, Virtual Meeting, USA, November 09-13 2020.

*) RF SciDAC, Oak Ridge National Laboratory, USA, March 02-06, 2020.

*) ARPA-E BETHE Virtual Kickoff, USA, August 11-12, 2020.

*) Conference on Plasma Simulation (CPS-2020), Gandhinagar, Gujarat, India, January 23-24, 2020.

*) 3rd Asia-Pacific Conference on Plasma Physics, Hefei, China, November 04-08, 2019.

*) The multiple approaches to plasma physics from laboratory to astrophysics, Les Houches, France, May 13-24, 2019.

*) 33rd National Symposium on Plasma Science and Technology- Plasma-2018, Delhi, India, December 04-07, 2018.

*) 2nd Asia-Pacific Conference on Plasma Physics, Kanazawa, Japan, November 12-17, 2018.

*) Conference on Plasma Simulations, IISc., Bengaluru, Karnataka, India, January 18-19, 2018.

*) 59th Annual Meeting of APS-DPP, Milwaukee, WI, USA, October 23-27, 2017.

*) Workshop on Laser-Plasma Accelerators (LPA), ICTS, TIFR, Bengaluru, Karnataka, India, March 06-17, 2017.

*) 10th Asia Plasma and Fusion Association, December 14-18, 2015.

*) The multiple approaches to plasma physics from laboratory to astrophysics, Les Houches, France, May 13-24, 2019.

*) 33rd National Symposium on Plasma Science and Technology- Plasma-2018, Delhi, India, December 04-07, 2018.

*) 2nd Asia-Pacific Conference on Plasma Physics, Kanazawa, Japan, November 12-17, 2018

*) Conference on Plasma Simulations, IISc., Bengaluru, Karnataka, India, January 18-19, 2018.

*) 59th Annual Meeting of APS-DPP, Milwaukee, WI, USA, October 23-27, 2017.

*) Workshop on Laser-Plasma Accelerators (LPA), ICTS, TIFR, Bengaluru, Karnataka, India, March 06-17, 2017.

*) 10th Asia Plasma and Fusion Association, December 14-18, 2015.

*) 30th National Symposium on Plasma Science and Technology- Plasma-2015, Kolkata, West Bengal, India, December 1-4, 2015.

*) International School on Ultra-Intense lasers , Moscow, Russia from October 04-09, 2015.

*) 29th National Symposium on Plasma Science and Technology- Plasma-2014, Kottayam, Kerala, India, December 08-11, 2015.

*) Hands-on School on Nonlinear Dynamics (HSND-2015), IPR, Gandhinagar-382428. India, February 16-22, 2015.

*) Turbulence, magnetic Fields, and Self Organisation in Laboratory and Astrophysical Plasmas, Les Houches, March 23-April 04, 2014.