भारत सरकार /Government of India
परमाणु ऊर्जा विभाग / Department of Atomic Energy
होमी भाभा राष्ट्रीय संस्थान / Homi Bhabha National Institute
राजा रामन्ना प्रगत प्रौद्योगिकी केन्द्र
Raja Ramanna Centre for Advanced Technology

HBNI Faculty Profile

Name	*Ajit Upadhyay*	
Designation	*Associate Professor, Dean (Student Affairs, HBNI, RRCAT)*	
Research Area	*Analytical & numerical modelling of ultra-short ultra-high intensity laser matter interaction, charged particle acceleration, radiation generation (Gamma Ray, THz) and hot electron transport. Particle-in-cell & Hydrodynamic Simulations.*	
Research Profile	*Dr. Upadhyay is leading a research group on Numerical Simulations of Laser-Plasma Interaction. He has more than twenty-five years' experience in the field of laser-plasma interaction. His team is involved in numerical modelling of physics of various aspects of laser-plasma interaction using radiation hydrodynamic codes as well as particle-in-cell (PIC) codes. His research programs focuses mainly on charged particle acceleration in the interaction of laser with gas-jet targets, metallic targets and novel hybrid targets. His team uses radiation hydrodynamic codes like Multi and Medusa and PIC codes like VORPAL, EPOCH, PICCANTE, SMILIE and a GPU based code PIConGPU*	

Ten Selected Recent Publications

1.	T. Mandal, V. Arora, A. Moorti, **A. Uphadhyay**, and J. A Chakera, Addressing key aspects of J 3 B driven MeV fast electron generation in ultra-short ultra-intense laser foil interaction, Phys. Plasmas 30, 023106 (2023).
2.	K Gopal, A P Singh, M Kundu, **A Upadhyay** and P Varshney, Terahertz radiation from semiconductor plasmas using extraordinary mode of lasers, Optik (2023).
3.	D. Phadte, **A. Upadhyay**, Y.B.S.R. Prasad, Electron beam acceleration using Colliding pulses injection in parabolic plasma channel, Optik - International Journal for Light and Electron Optics 265 (2022) 169402.
4.	P. Varshney, A.P. Singh, **A. Upadhyay**, M. Kundu, K. Gopal, Effect of laser intensity redistribution on semiconductor plasma based THz emission, Optik - International Journal for Light and Electron Optics 250 (2022) 168353.

5.	Prateek Varshney, Krishna Gopal and **Ajit Upadhyay**, Terahertz emission from nonlinear interaction of laser beat wave with nanoparticles, Laser Phys. Lett. 17 (2020) 126002.
6.	T. Mandal, V. Arora, A. Moorti, **A. Upadhyay**, and J. A. Chakera, Experimental study of fast electron generation from intense laser irradiated mylar foil with thin metal coating on front or rear surfaces, Phys. Plasmas 26, 013103 (2019).
7.	D Hazra, A Moorti, S Mishra, **A Upadhyay** and J A Chakera, Direct laser acceleration of electrons in a high-Z gas target and the effect of threshold plasma density on electron beam generation, Plasma Phys. Control. Fusion 61, 125016, (2019).
8.	T. Mandal, V. Arora, B. S. Rao , A. Moorti, **A. Upadhyay**, and J. A. Chakera, Experimental study of fast electron generation in intense short duration laser solid interaction at grazing incidence, Phys. Plasmas 26, 043105, 2019.
9.	T. Mandal, V. Arora, A. Moorti, **A. Upadhyay**, and J. A. Chakera, Experimental study of fast electron generation from intense laser irradiated mylar foil with thin metal coating on front or rear surfaces, Phys. Plasmas 26, 013103, 2019.
10.	Prateek Varshney, **Ajit Upadhayay**, K. Madhubabu, Vivek Sajal and J. A. Chakera, Strong terahertz radiation generation by cosh-Gaussian laser beams in axially magnetized collisional plasma under non-relativistic ponderomotive regime, Laser & Particle Beams, Volume 36, Issue 2, pp. 236-245, June 2018.