

Profile Page



Name : Dr Arvinder Singh
Designation : Professor
Department : Physics
Qualification : PhD (Guru Nanak Dev University, Amritsar)
MSc (Punjab Agricultural University, Ludhiana)
BSc (Punjab University Chandigarh)
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Research Interests :

Laser Plasma Interactions: Self-focusing of laser, Harmonic generation, Laser-Plasma accelerators and THz generation.

Other Profile Links :

Google Scholar Link :

Prof. Arvinder Singh [Click Here](#)

Personal Web Link :

Prof. Arvinder Singh [Click Here](#)

Journal Publications :

Year	Journal	Publication
2020	Laser and Particle Beams (Cambridge University Press. USA)	Second-harmonic generation by a chirped laser pulse with the exponential density ramp profile in the presence of a planar magnetostatic wiggler. https://doi.org/10.1017/ Niti Kant, Arvinder Singh and Vishal Thakur
2020	The European Physical Journal(Springer)	Enhanced electron acceleration by a chirped tightly focused laser in vacuum in the presence of axial magnetic field. Vol.74, 142 Niti Kant, Jyoti Rajput and Arvinder Singh
2020	Optik (Elsevier)	Enhanced second harmonic generation of dark hollow Gaussian laser beam in collisionless magneto-plasma, 212 163783 Jyoti Wadhwa, Trivesh Kant and Arvinder Singh
2020	Laser Physics (IOP)	Enhanced second harmonic generation of Hermite–Gaussian laser beam in plasma having density transition. Vol.30 046001, Jyoti Wadhwa and Arvinder Singh
2019	Laser and Particle Beams (Cambridge University Press. USA)	Generation of second harmonics of intense Hermite-Gaussian laser beam in relativistic plasma. Vol. 37, 79-85. Jyoti and Arvinder Singh
2019	Optik (Elsevier)	Second harmonic generation of self-focused Hermite-Gaussian laser beam in collisional plasma. https://doi.org/10.1016/j.ijleo.2019.01.116 Jyoti and Arvinder Singh

2019	Physics of Plasmas (American Institute of Physics(AIP))	Second harmonic generation by a self-focused Hermite-Gaussian laser beam in collisionless plasma, Vol.26, 062118. Jyoti and Arvinder Singh
2019	Optik (Elsevier)	Magnetic field assisted enhanced electron acceleration due to a chirped echelon phase modulated laser in vacuum, Vol.182 858-865. Niti Kant, Jyoti Rajput and Arvinder Singh
2018	High Energy Density Physics (Elsevier)	Electron acceleration from rest to GeV energy by chirped axicon Gaussian laser pulse in vacuum in the presence of wiggler magnetic field. 26 16-22,Niti Kant, Jyoti Rajput and Arvinder Singh
2017	Contributions to Plasma Physics (Wiley-VCH Verlag.)	Dynamics of Quadruple Laser Pulses in Underdense Plasmas. Naveen Gupta and Arvinder Singh
2017	Waves in Random and Complex Media (Taylor and Francis)	Dynamics of Quadruple Laser Beams in Collisionless Plasmas. Naveen Gupta and Arvinder Singh DOI:10.1080/17455030.2017.1394600
2017	Laser Physics (IOP)	Combined influence of azimuthal and axial magnetic fields on resonant electron acceleration in plasma,27 110001. Arvinder Singh, Jyoti Rajput and Niti Kant
2016	Laser and Particle Beams (Cambridge University Press. USA)	Electron Plasma Wave Excitation by Beating of Two q-Gaussian Laser Beams in Collisionless Plasma. 34 Issue 02, 230-241, 2016. Arvinder Singh and Naveen Gupta.
2016	Optik (Elsevier)	Second Harmonic Generation by Self Focused q-Gaussian Laser Beam in Preformed Collisional Parabolic Plasma. 127, 2432-2438, 2016. Arvinder Singh and Naveen Gupta.
2016	Optik (Elsevier)	Beat Wave Excitation of Electron Plasma Wave by Cross-Focusing of Intense Cosh-Gaussian Laser Beams in Collisionless Plasma with Upward Density Ramp. 127 Issue 11, 4909-4917, 2016. Arvinder Singh and Naveen Gupta.
2016	Optik (Elsevier)	Second Harmonic Generation of Self Focused Cosh-Gaussian Laser Beam in Collisional Plasma. 127 Issue 13, 5452-5461, 2016. Arvinder Singh and Naveen Gupta.
2016	Optik (Elsevier)	Effect of Cross-Focusing of Two q-Gaussian Laser Beams on Excitation of Electron Plasma Wave in Collisional Plasma. 127, 8542, 2016. Naveen Gupta and Arvinder Singh.
2016	High Energy Density Physics (Elsevier) 18 20-25	Effect of axial magnetic field on axicon laser-induced electron acceleration.Niti Kant, Jyoti Rajput, Pankaj Giri and Arvinder Singh
2016	Contributions to Plasma Physics (Wiley-VCH Verlag.)	Second Harmonic Generation of Self-Focused Cosh-Gaussian Laser Beam in Thermal Quantum Plasma by Excitation of an Electron Plasma Wave. DOI: 10.1002/ctpp.201600008, 2016. Naveen Gupta and Arvinder Singh.
2016	Optics Communications(Elsevier)	Second Harmonic Generation of Cosh-Gaussian Laser Beam in Collisional Plasma with Nonlinear Absorption. 381, 180, 2016. Navpreet Singh, Naveen Gupta and Arvinder Singh.
2015	Physics of Plasmas (American Institute of Physics(AIP))	Second harmonic generation by relativistic self-focusing of q-Gaussian laser beam in preformed parabolic plasma channel. 22 , 013102, 2015. Arvinder Singh and Naveen Gupta.
2015	Contributions to Plasma Physics (Wiley-VCH Verlag.)	Second Harmonic Generation of Self Focused Cosh-Gaussian Laser Beam in Collisionless Plasma. 55 Issue 7, 501-512, 2015. Arvinder Singh and Naveen Gupta.
2015	Physics of Plasmas (American Institute of Physics(AIP))	Beat Wave Excitation of Electron Plasma Wave by Relativistic Cross-focusing of cosh Gaussian Laser Beams in Underdense Plasma. 22, 062115, 2015. Arvinder Singh and Naveen Gupta.
2015	Laser and Particle Beams (Cambridge University Press. USA)	Beat Wave Excitation of Electron Plasma Wave by Cross-focusing of Cosh Gaussian Laser Beams in Collisional Plasma. 33 Issue 04, 621-632, 2015. Arvinder Singh and Naveen Gupta.

2015	Laser and Particle Beams (Cambridge University Press. USA)	Second Harmonic Generation by Relativistic Self Focusing of Cosh-Gaussian Laser Beam in underdense Plasma. 34 Issue 01, 1-10, 2015. Arvinder Singh and Naveen Gupta.
2015	Phys. Plasmas (AIP)	Second Harmonic Generation of q-Gaussian Laser Beam in Preformed Collisional Plasma Channel with Nonlinear Absorption. 22, 113106, 2015. Naveen Gupta, Navpreet Singh and Arvinder Singh.
2014	Optic, International Journal for Light and Electron Optics (Elsevier)	Comparison of two theories during self-focusing of gaussian laser beam in thermal conduction-loss predominant plasmas. 125, 989-992, 2014. Keshav Walia and Arvinder singh.
2014	Journal of Physics: conference series IOP	Laser Guiding Through an Axially Nonuniform Collisional Plasma Channel. 516, 012027, 2014. Arvinder singh and Navpreet Singh.
2014	Journal of Fusion Energy (Springer)	Effect of self-focusing of gaussian laser beam on second harmonic generation in relativistic plasma. 33, 83, 2014. Keshav Walia and Arvinder singh.
2014	Journal of Nonlinear Optical Physics & Materials. (World Scientific)	The effect of plasma channel on the self-distortion of laser pulse propagating through the collisionless plasma channel. 23 Issue – 3, 1450027, 2014. Navpreet Singh and Arvinder singh.
2014	Optic, International Journal for Light and Electron Optics (Elsevier)	The effect of plasma channel on the self-distortion of laser pulse propagating through the collisional plasma channel. 125, 7198-7202, 2014. Navpreet Sng and Arvinder singh.
2014	Laser and Particle Beams (Cambridge University Press. USA)	Higher Harmonic Generation by Self Focused q-Gaussian Beam in Preformed Collisionless Plasma Channel. 32, 621, 2014. Arvinder Singh and Naveen Gupta.
2013	Optic, International Journal for Light and Electron Optics (Elsevier)	Stimulated Raman Scattering of Gaussian laser beam in relativistic plasma. 124 Issue 18, 3470-3475, 2013. Arvinder singh and Keshav Walia.
2013	Optics Communications (Elsevier)	Self-focusing of gaussian laser beam in Collisionless Plasma and its effect on Stimulated Brillouin Scattering Process. 290, 175-182, 2013. Arvinder singh and Keshav Walia.
2013	Journal of Fusion Energy (Springer US)	Self-focusing of gaussian laser beam through collisional plasmas: Moment Theory Approach. 32 Issue 4, 422-425, 2013. Arvinder singh and Keshav Walia.
2013	Journal of Fusion Energy (Springer US)	Stimulated Brillouin Scattering of Gaussian laser beam in relativistic plasma. 32 Issue 3, 355-361, 2013. Arvinder singh and Keshav Walia.
2013	Optic, International Journal for Light and Electron Optics (Elsevier)	Self-focusing of gaussian laser beam in Collisionless Plasma and its effect on Stimulated Raman Scattering Process. 124 Issue 23, 6074-6080. 2013. Arvinder singh and Keshav Walia.
2013	Journal of Nonlinear Optical Physics & Materials. (World Scientific)	Effect Of self-focusing on Stimulated Raman Scattering By a gaussian laser beam in collisional plasma: Moment theory approach. 22 Issue 03, 1350030, 2013. Keshav Walia and Arvinder singh.
2012	Journal of Fusion Energy (Elsevier)	Enhanced Raman Scattering of Elliptical laser beam in a Collisionless Plasma. 31 Issue 1, 21-29, 2012. Arvinder singh and Keshav Walia.
2012	Journal of Fusion Energy (Elsevier)	Guidance of a Laser Beam Through an Axially Non-uniform Plasma Channel in the weakly relativistic limit. 30 Issue 6, 539-544, 2012. Arvinder Singh and Navpreet Singh.
2012	Journal of Fusion Energy (Elsevier)	Laser guiding through an axially nonuniform collisionless plasma channel. 31, 538, 2012. Arvinder Singh and Navpreet Singh.
2012	Journal of Fusion Energy (Elsevier)	Self-focusing of Elliptical laser beam in Collisional Plasma and its effect on Stimulated Brillouin Scattering Process. 31 Issue 6, 531-537, 2012. Arvinder singh and Keshav Walia.
2012	Optics & Laser Technology (Elsevier)	Stimulated Brillouin scattering of Elliptical laser beam in Collisionless Plasma. 44, 781-787, 2012. Arvinder singh and Keshav Walia.

2012	Journal of Plasma Physics (Cambridge University Press. USA)	Guiding of a Laser Beam in Collisional Magnetoplasma Channel. 78 Issue 03, 249-257, 2012. Arvinder Singh and Navpreet Singh.
2011	Contrib. Plasma Physics (Wiley-VCH Verlag.)	Comparison of two theories for the relativistic self-focusing of laser beams in plasma. 51 Issue 4, 375-381, 2011. Arvinder singh and Keshav Walia.
2011	Contrib. Plasma Physics (Wiley-VCH Verlag.)	Enhanced Raman Scattering of Elliptical laser beam in a Collisional Plasma. 51 Issue 9, 788-797, 2011. Arvinder singh and Keshav Walia.
2011	Laser and Particle Beams (Cambridge University Press. USA)	Relativistic guidance of an intense laser beam through an axially non-uniform plasma channel. 29 Issue 03, 291-298, 2011. Arvinder Singh and Navpreet Singh.
2011	Journal of Fusion Energy (Elsevier)	Self-focusing of Gaussian laser beam through collisionless plasmas and its effect on Second Harmonic generation. 30, 555-560, 2011. Arvinder singh and Keshav Walia.
2011	Journal of Optical Society of America B (Optical Society of America)	Guiding of a Laser Beam in Collisionless Magnetoplasma Channel. 28 Issue 8, 1844-1850, 2011. Arvinder Singh and Navpreet Singh.
2011	Laser and Particle Beams (Cambridge University Press. USA)	Self-focusing of laser beam in collisional plasma and its effect on Second, Harmonic generation. 29 Issue 04, 407-414, 2011. Arvinder singh and Keshav Walia.
2010	Contrib. Plasma Physics (Wiley-VCH Verlag.)	Dynamics of Filament Formation in Laser Produced Collisional Magnetoplasma. 50 Issue 2, 146-155, 2010. Arvinder Singh, Munish Aggarwal and Tarsem Singh Gill.
2010	Laser and Particle Beams (Cambridge University Press. USA)	Optical Guiding of Laser Beam in an Axially Nonuniform Plasma Channel. 28 Issue 2, 263-268, 2010. Arvinder Singh and Navpreet Singh.
2010	Applied Physics B (Springer)	Relativistic self-focusing and self-channeling of Gaussian laser beam in plasma. 101 Issue 03, 617-622, 2010. Arvinder singh and Keshav Walia.
2009	Physica Scripta (IOP Publishing Ltd)	Dynamics of filament formation in magnetized laser produced plasma. 80, 015502, 2009. Arvinder Singh and Munish Aggarwal.
2009	Laser and Particle Beams (Cambridge University Press. USA)	Dynamics of Gaussian Spikes on Gaussian laser beam in relativistic plasma. 27 Issue 04, 587-593, 2009. Arvinder Singh, Munish Aggarwal and Tarsem Singh Gill.
2008	Optic, International Journal for Light and Electron Optics (Elsevier)	Optical Guiding of Elliptical laser beam in non-uniform plasma. 119, 559-564, 2008. Arvinder Singh, Munish Aggarwal, Tarsem Singh Gill.
2004	Optic, International Journal for Light and Electron Optics (Elsevier)	Propagation of elliptic Gaussian laser beam in a higher order non-linear medium. 115 Issue 11-12 , 493-498, 2004. Tarsem Singh Gill, Nareshpal Singh. S.S. Kaul and Arvinder Singh.
1991	Plasma Physics and Controlled Fusion (IOP)	Nonlinear Interaction of Rippled Laser Beam with Unmagnetized Plasma. 33 Issue 2, 123, 1991. Arvinder Singh and Tarsem Singh.
1991	IL Nuovo Cimento (Springer)	Growth of a Laser Ripple in a Magnetoplasma and its effect on Plasma wave Excitation. 13 Issue 3, 363-375, 1991. Arvinder Singh and Tarsem Singh.
1991	Contrib. Plasma Physics (Wiley-VCH Verlag.)	Growth of a Laser Ripple on a, Gaussian Beam in a Collisionless Magnetoplasma and its effect on the Excitation of Ion-Acoustic wave. 31 Issue 5, 499-512, 1991. Arvinder Singh and Tarsem Singh.
1990	J. Plasma Physics (Cambridge University Press. USA)	The effect of a Static Magnetic Field on the growth of a Rippled Electromagnetic beam. 43 Issue 3, 465-474, 1990. Arvinder Singh and Tarsem Singh

Conference Publications :

Year	Conference	Publication
2019	Frontiers Of Nonlinear Physics ,Nizhny Novgorod, Institute Of Applied Physics , RAS Russia 28 June-04 July, 2019	
2016	International Conference on EMN Meeting ,Plasma Science And Technology, OAHOST Melbourne, Australia 10-14 Oct,2016	
2012	LPHYS'12 Annual International Workshop, University of Calgary ,Canada 23-27 Jul,2012	
2010	Frontiers Of Nonlinear Physics ,Nizhny Novgorod, Institute Of Applied Physics , RAS Russia 13-20 July, 2010	
2010	International Toki Conference(ITC20) On The Next Twenty Years in Plasma and Fusion Science, National Institute For Fusion Science ,Toki Gifu, Japan 7-10 Dec,2010	
2008	35th IEEE International Conference On Plasma Science(ICOPS2008), IEEE Nuclear And Plasma Science Society, Karlsruhe, Germany 15-19 Jun,2008	
2007	34th IEEE International Conference on Plasma Science (ICOPS), IEEE Nuclear And Plasma Science Society, Albuquerque, USA 17-22 Jun,2007	

Research Projects :

Role	Project Type	Title	Funding Agency	From	To	Amount	Status	Co-Investigator
Mentor	Research Project(TARE)	Efficient harmonic generation during laser plasma interaction	DST-SERB	01-01-19	01-01-22	18.30Lac	Ongoing	Dr Niti Kant

Professional Affiliations :

Designation	Organization
Professor	Dr B R Ambedkar, National Institute of Technology, Jalandhar-144011(Punjab), India

PhD Supervised :

Scholar Name	Research Topic	Status	Year	Co-Supervisor
Aman Bhatia		Ongoing	2019	None
Proxy Kad	Theoretical Investigation of electron Acceleration in laser produced plasma	Ongoing	2018	None
Jyoti Wadhwa	Theoretical Investigation of Optical Guiding of Laser Beam and Second Harmonic Generation in Plasma	Ongoing	2016-	None
Jyoti Rajput	Laser Induced Electron Acceleration in Vacuum and Plasmas	completed	2012-2019	Dr. Niti Kant

Naveen Gupta	Theoretical Investigation of Some Nonlinear Phenomena in Preformed Plasma Channel	Completed	2012-2018	None
Navpreet Singh	Laser Guidance through Nonuniform Plasma Channel	Completed	2008-2012	None
Keshav Walia	Theoretical Investigations of Some Non-linear Phenomena in Plasma	Completed	2008-2012	None
Munish Aggarwal	Nonlinear Interaction and Optical Guiding of Laser Beam in Plasma	Completed	2006-2011	None

PG Dissertation Guided :

Student Name	Dissertation Title	Status	Year	Co-Supervisor
Trivesh Kant	Second Harmonic Generation of Dark Hollow Gaussian Laser Beam in Collisionless Magneto Plasma	completed	2019	None
Sumit Kumar	Second Harmonic Generation of Self Focused Dark Hollow Gaussian Laser Beam in Collisional Plasma Under the effect of external Magnetic Field	completed	2019	None
Yogita	Effect of Relativistic Self Focusing of Dark Hollow Gaussian laser beam on Second Harmonic Generation in Collisionless Plasma	completed	2019	None
Proxy Kad	Second Harmonic Generation by Self-Focused Gaussian and Dark Hollow Intense Laser Beam in Relativistic Plasma	completed	2018	None
Deepanshu Yadav	Second Harmonic Generation by Self-Focused Gaussian and Dark Hollow Intense Laser Beam in Collisionless Plasma	completed	2018	None
Aditi Mehta	Second Harmonic Generation by Self-Focused Gaussian and Dark Hollow Intense Laser Beam in Collisional Plasma	completed	2018	None
Shalu Kumari	Tera Hertz Generation of Ultra Intense Dark Hollow Laser Beam by weakly Relativistic Self-focusing in Underdense Plasma	completed	2017	None
Manu Singh Beniwal	Tera Hertz Generation of Selfed-Focused Dark Hollow Laser Beam in Magnetized Collisionless Plasma	completed	2017	None
Deepak Bansal	Tera Hertz Generation of Selfed-Focused Dark Hollow Laser Beam in Magnetized Collisional Plasma	completed	2017	None
Sukhjot Kaur	Tera Hertz Generation by Self-focused Dark Hollow Laser Beam in Preformed Underdense Plasma	completed	2016	None
Jagroop Kaur	Tera Hertz Generation of Self-focused Dark Hollow Laser Beam in Collisionless Plasma	completed	2016	None
Gaganpreet Kaur	Tera Hertz Generation of Self-focused Dark Hollow Laser Beam in Collisional Plasma	completed	2015	None
Rajpreet Kaur	Tera Hertz Generation of Ultra Intense Dark Hollow Laser Beam by Self-focusing in Underdense Plasma	completed	2015	None
Pawanpreet Kaur	Optical Guiding of Cosh-Gaussian Laser Beam in Axially Non-Uniform Collisionless Plasma Channel	completed	2014	None

Ritu Sharma	Optical Guiding of Cosh-Gaussian Laser Beam in Axially Non-Uniform Relativistic Plasma Channel	completed	2014	None
Deeksha	Optical Guiding of Gaussian Laser Beam in Relativistic Plasma	completed	2013	None
Vanita	Optical Guiding of Gaussian Laser Beam Through An Axially Non Uniform Weakly Relativistic Plasma	completed	2013	None
Rahul Chhabra	Optical Guiding of Gaussian Laser Beam in Collisional Magnetoplasma	completed	2013	None
Kiranpreet Kaur	Guiding of Laser Beam in a Collisionless Magnetoplasma Channel	completed	2012	None
Shikha Sharma	Optical Guiding of Gaussian Laser Beam in Collisionless Plasma	completed	2012	None
Rishu Bharti	Optical Guiding of Gaussian Laser Beam in Collisional Plasma	completed	2010	None
Kehav Walia	Theoretical Approach to Self Focusing by Moment Theory Approach	completed	2008	None
Anita Thakur	Theoretical Approach to Self Focusing by Paraxial ray Approximation	completed	2008	None
Simarjeet Kaur	Theoretical Approach to Self Focusing by Variational Technique	completed	2008	None

Admin. Responsibilities :

Position Held	Organization	From	To
Dean Students and Alumni	Dr B R Ambedkar National Institute of Technology Jalandhar	01/09/2007	01/09/2009
Head Department of Physics	Dr B R Ambedkar National Institute of Technology Jalandhar	05/05/2002	17/06/2003
Head Department of Physics	Dr B R Ambedkar National Institute of Technology Jalandhar	04/04/2005	31/08/2007
Head Department of Physics	Dr B R Ambedkar National Institute of Technology Jalandhar	04/09/2009	04/09/2012
Chief Vigilance Officer	Dr B R Ambedkar National Institute of Technology Jalandhar	13/04/2006	16/10/2009
Chairman Campus Amenities Cell	Dr B R Ambedkar National Institute of Technology Jalandhar	26/09/2003	19/01/2010
Chairman e-Governance Cell	Dr B R Ambedkar National Institute of Technology Jalandhar	31/01/2015	01/03/2016
Chairman Library Committee	Dr B R Ambedkar National Institute of Technology Jalandhar	09/02/2018	Till date