

## Dhananjay K Singh

Assistant Professor,  
Dept. of Physics  
P. K. Roy Memorial College,  
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### Current Research Work

Current research area includes theoretical and computational study of Laser-Plasma Interaction relevant to Particle Acceleration and Inertial Confinement Fusion.

### Education

- **Postdoctoral Fellowship**, 2009-2011, Instituto Superior Técnico, Lisbon, Portugal. (European Union HiPER Fellowship)
- **PhD**, Plasma Physics, 2008, Indian Institute of Technology (IIT) New Delhi. Thesis: *"Soliton Reflection in Magnetized Plasmas Containing Negative ions"*.
- **MSc**, Physics, 2003, Jawaharlal Nehru University, New Delhi, India. MSc Thesis: *"DMPK Equation for Quantum Transport"*
- **BSc**, Physics Honours, 2001, Ranchi University, India.

### Research/Teaching Experiences

- August 2011- till date: **Assistant Professor**, Dept of Physics, PKRM College, Binod Bihari Mahto Koyalanchal University, Dhanbad, India.
- March 2008-April 2009; Feb 2011- July 2011: **Lecturer**, SSLNT College Dhanbad, Vinoba Bhave University, India.
- April 2009 – Feb 2011: **Postdoctoral Fellow**, Grupo de Lasers e Plasmas, Instituto Superior Técnico, 1049-001 Lisboa, Portugal.
- August 2007 – March 2008: **Senior Research Fellow** of Council of Scientific and Industrial Research, Govt. of India.
- July 2005 – July 2007: **Junior Research Fellow (JRF)** of Council of Scientific and Industrial Research (**CSIR**), Govt. of India, working towards PhD degree at Dept. of Physics, Indian Institute of Technology (IIT), New Delhi, India.
- **Teaching Assistantship (TA)** for four semesters during 2006-2008 in the B.Tech. Laboratory at Indian Institute of Technology (IIT), New Delhi, India.

## Publications: International Journals

- 1) **D. K. Singh**, J. R. Davies, G. Sarri, F. Fiuza, and L.O. Silva "Dynamics of intense laser propagation in underdense plasma: Polarization dependence" **Physics of Plasmas** (2012) 19, 073111 © 2012 American Institute of Physics
- 2) G. Sarri, **D. K. Singh**, J. R. Davies et al. "Observation of post-soliton expansion following laser propagation through an underdense plasma" **Phys. Rev. Lett.** (2010) 105, 175007 . © 2010 American Physics Society
- 3) **D.K. Singh** and H.K. Malik, " Effect of Trapped Electrons on Soliton Energy in an inhomogeneous Magnetized Multicomponent Plasma" **Journal of Physics: Conference Series** (2010) 208, 012054 © 2010 IOP Publishing Ltd UK
- 4) H.K. Malik, **D.K. Singh**, and Y. Nishida "On reflection of solitary waves in a magnetized multicomponent plasma with nonisothermal electrons" **Physics of Plasmas** (2009) 16, 072112. © 2009 American Institute of Physics
- 5) **D. K. Singh** and H. K. Malik, "Slow wave solitons in a multicomponent magnetized inhomogeneous plasma with nonisothermal electrons," *2009 IEEE International Conference on Plasma Science* - doi: 10.1109/PLASMA.2009.5227248. © 2008 IEEE
- 6) **D.K. Singh** and H.K. Malik, "Solitons in Inhomogeneous Magnetized Negative Ion containing Plasma with Two Temperature Nonisothermal Electrons" **IEEE Transactions on Plasma Science** (2008) 36, 462. © 2008 IEEE
- 7) H.K. Malik, K.P. Singh, S. Kawata, U. Stroth, **D.K. Singh**, V.K. Jain, Y. Nishida, and Y. Nejoh "Reflection of Solitons at Critical Density of Negative Ions: Contribution of Thermal and Gyrotory Motions of Ions" **IEEE Transactions on Plasma Science** (2008) 36, 738. © 2008 IEEE
- 8) **D.K. Singh** and H.K. Malik, "Studies on Soliton Energy at Critical and Noncritical Density of Negative Ions in an Inhomogeneous Magnetized Warm Plasma" **Physics of Plasmas** (2007) 14, 112103. © 2007 American Institute of Physics
- 9) **D.K. Singh** and H.K. Malik, "Reflection of Nonlinear Solitary Waves (mKdV Solitons) at Critical Density of Negative Ions in a Magnetized Cold Plasma" **Plasma Physics and Controlled Fusion** (2007) 49, 1551. © 2007 IOP Publishing Ltd UK
- 10) **D.K. Singh** and H.K. Malik, "mKdV Soliton Evolution at Critical Density of Negative Ions in an Inhomogeneous Magnetized Cold Plasma" **Physics of Plasmas** (2007), 14, 062113. © 2007 American Institute of Physics
- 11) **D.K. Singh** and H.K. Malik, "Soliton Reflection in a Negative Ion containing Plasma: Effect of Magnetic Field and Ion Temperature" **Physics of Plasmas**, (2006), 13, 082104. © 2006 American Institute of Physics

### International Conferences:

- 1) S. Kumar, **D.K. Singh** and H.K. Malik “ Numerical Modeling of Laser Wakefield Acceleration using the PIC code Smilei” **4th Asia-Pacific Conference on Plasma Physics**, 26<sup>th</sup> – 31<sup>st</sup> Oct, 2020, Remote e-conference
- 2) **D.K. Singh**, S. Kumar and H.K. Malik “Dynamics of relativistic electromagnetic solitons and post solitons in laser-plasma interaction ”, **12<sup>th</sup> International Conference on Plasma Science and Applications (ICPSA - 2019)**, 11<sup>th</sup>–14<sup>th</sup> November, 2019, Lucknow, India.
- 3) **D.K. Singh** “PIC Simulation of Laser Channeling Relevant to HiPER Baseline Target”, **Christmas meeting of the High Power Laser science community**, 15th -17th December 2010, The Guildhall, Abingdon, London, UK.
- 4) **D.K. Singh**, J.R. Davies, F. Fiuza and L.O. Silva, ‘PIC Modelling of laser channelling in the corona of the HiPER baseline target’, **1<sup>st</sup> IPFN Workshop** 12 November 2010, Lisbon, Portugal.
- 5) **D.K. Singh**, J.R. Davies, F. Fiuza and L.O. Silva, ‘Modelling of laser channelling in the corona of the HiPER baseline target’, **37<sup>th</sup> European Physics Meeting (EPS2010)** P5.206, 21 - 25 June 2010, Dublin City University, Dublin, Ireland.
- 6) G. Sarri, **D.K. Singh**, J.R. Davies, et al. ‘Experimental Detection of Post-Soliton Structures Following High Intensity Laser Interaction With a Sub-Critical Gas jet’, **37<sup>th</sup> European Physics Meeting (EPS2010)** P5.217, 21 - 25 June 2010, Dublin City University, Dublin, Ireland.
- 7) **D.K. Singh**, J.R. Davies and L.O. Silva, ‘Theoretical Studies and Simulations on Laser Channeling’ at **HiPER Fellow Meeting**, 4<sup>th</sup> March 2010, Prague, Czech Republic.
- 8) **D.K. Singh** “PIC Simulation of Laser Channeling for Fast Ignition”, at **Christmas meeting of the High Power Laser science community**, 16th-18th December 2009, Rutherford Appleton Laboratory, London, UK
- 9) **D.K. Singh** and H.K. Malik, “Slow Wave Solitons in an Inhomogeneous Magnetized Plasma having Negative Ions” 36<sup>th</sup> International Conference on Plasma Science, May 31 – June 5, 2009 , San Diego, California
- 10) **D.K. Singh** and H.K. Malik, “Energy carried by KdV and mKdV Solitons in an Inhomogeneous Magnetized Plasma having Negative Ions” **The 10th Asia Pacific Physics Conference (APPC10)**, Pohang, Korea (2007) 178.

### National Conferences:

- 11) **D.K. Singh** “**Laser-Plasma Interaction Pertinent to Inertial Confinement Fusion**”, ASTM-2018, 14-16 March 2018, IIT (ISM) Dhanbad, India.
- 12) **D.K. Singh** “**Inertial Confinement of Plasma for Fusion Energy**”, RAPS-2018, 19-20 January 2018, P.K.Roy Memorial College, Dhanbad, India
- 13) **D.K. Singh**, “Laser–plasma interactions relevant to fast ignition” **30<sup>th</sup> National Symposium on Plasma Science and Technology, PLASMA 2015**, SINP, Kolkata, India.
- 14) **D.K. Singh**, “Propagation of Intense Laser in Underdense Plasma Relevant to Fast Ignition” **29<sup>th</sup> National Symposium on Plasma Science and Technology, PLASMA 2014** Mahatma Gandhi University, Kottayam, Kerala, India
- 15) **D.K. Singh** and H.K. Malik, “Effect of Trapped Electrons on Soliton Energy in an Inhomogeneous Magnetized Multicomponent Plasma” **23<sup>st</sup> National Symposium on Plasma Science and Technology, PLASMA 2008**, BARC, Mumbai, India.

## **Academic/Administrative Engagements at University**

- Nodal Officer AISHE (Since 2018)
- Chairman, Admission Cell (Since 2018)
- Nodal Officer RUSA (Since 2019)

## **Academic/Administrative Engagements at College**

- Nodal Officer Placement Cell (2015-18)
- Nodal Officer AISHE (2015-18)
- Member RUSA cell
- Member IQAC

## **Membership**

Member of European Physics Society (EPS) [Membership No: IM100151]

Life Member of Plasma Science Society of India (PSSI) [Membership No: LM698]

Life Member of Indian Association of Physics Teachers (IAPT)