

Nilay Kundu | Curriculum Vitae

Contact Details

Present address : Department of Physics, Indian Institute of Technology, Kanpur 208016, Uttar Pradesh, India
Office : Room Number 313, Industrial & Management Engineering (IME) building
Phone : +91-512-259-6801 (Extn = 6801)
email : nilay.tifr(at)gmail.com, nilayhep(at)iitk.ac.in

Education

Secondary (Class-X) 1992–2002
o West Bengal Board of Secondary Education (WBBSE); Passed in First Division with 93% Marks

Higher Secondary (Class-XII) 2002–2004
o West Bengal Council of Higher Secondary Education (WBCHSE); Passed in First Division with 90% Marks

Bachelor of Science (B.Sc.) in Physics 2004–2007
o Jadavpur University, Kolkata; Honors in Physics, Passed in First Division with 78.83% Marks

Master of Science (M.Sc.) in Physics 2007–2009
o Jadavpur University, Kolkata; Passed in First Division with 81.19% Marks

Research Scholar : Doctoral Thesis (PhD) 2009–2014
o Department of Theoretical Physics, Tata Institute of Fundamental Research, Mumbai, India
o Thesis Title : "A study of symmetries and phases in gravity with application to holography and cosmology"
(Online link : http://www.theory.tifr.res.in/Research/Thesis/thesis_nilay.pdf)
o Thesis supervisor : Professor Sandip P. Trivedi
o Thesis Submitted : September, 2014, Degree Awarded : 05-05-2015 (dd-mm-yyyy)

Professional Experience

Postdoctoral Fellow September, 2014 – October, 2016
o Harish-Chandra Research Institute, Chhatnag Road, Jhansi, Allahabad, Uttar Pradesh 211 019, India.

Research Assistant Professor November, 2016 – September, 2018
(Equivalent to Senior Postdoctoral Fellow)
o Yukawa Institute for Theoretical Physics (YITP), Kyoto University, Kyoto, Japan.

Assistant Professor October, 2018 – Present
o Department of Physics, Indian Institute of Technology, Kanpur.

Research Interest

Key Words : Classical and Quantum Gravity, Quantum Field Theory, String Theory : AdS/CFT Correspondence.

More details : My research interests are broadly in aspects of Theoretical High Energy Physics. More specifically, I am involved in studying and doing research in String Theory, with an aim to understand classical and

quantum aspects of both Gravitation and Field Theory, as well as their interplay through Holography (Anti-de Sitter/Conformal Field Theory (AdS/CFT) correspondence).

A salient feature of my research has been to use techniques of AdS/CFT correspondence to explore possible connections between two apparently different fields : theory of gravity with strongly correlated aspects of field theory/condensed matter systems. On one side we use this correspondence as computational tool to explore features of strongly correlated field theories through simple gravity calculations. Recently I am also interested in understanding the yet mysterious basic mechanism of this holographic principle with an aim to elevate the status of this correspondence or duality from a conjecture to an ambitious first principle proof.

A considerable proportion of my research interests are also in exploring issues in gravitation, both classical and quantum aspects of it, as well as early Universe cosmology. To be precise, my interests are in understanding black hole thermodynamics in effective theories of gravity going beyond Einstein's theory of general relativity, as well as exploring model independent features of inflationary paradigm of early universe and investigate the possible connections with future observations.

Research Publications

Online link : Web-link of up-to-date list of publications :

- o in inspire-hep : (<http://inspirehep.net/search?p=exactauthor%3AN.Kundu.2&sf=earliestdate>),
- o in arXiv : (<http://arxiv.org/find/all/1/all:+AND+nilay+kundu/0/1/0/all/0/1>)
- o in Google scholar : (<https://scholar.google.com/citations?user=ChIzZiAAAAAJ&hl=en>)

Awards

January, 2010 : Awarded *Junior Research Fellowship* and *Eligibility for Lectureship* by *Council of Scientific and Industrial Research (CSIR)*, Government of India (All India rank - 26).

February, 2018 : Awarded *INSPIRE faculty Fellowship* by *Department of Science and Technology (DST)*, Government of India