

ACADEMIC EXPERIENCE

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The Institute of Mathematical Sciences, Chennai, India



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POSITIONS

The Institute of Mathematical Sciences Chennai TN India

Faculty of Theoretical Physics

2008 – Present

- Teaching and project guidance for graduate and undergraduate students in Theoretical Physics.
- Research
 - * String Theory: string quantization in curved background, loop space framework, tubular geometry, covariant string bits.
 - * Gravity: Dixon's framework of gravitational multiple moments, generalization to light-cone foliation, a configuration space approach to few body problem.
 - * Quantum Field Theory: Construction of lattice models with manifest spacetime symmetries - both Poincaré and a class of generally covariant theories
- Conference organization.
- Journal paper review.

University of Kentucky Lexington KY USA

Visiting Scientist (sabbatical)

2020 – 2021

- Weekly interaction with Theory Group, Physics & Astronomy.
- Research: Construction of Poincaré invariant lattice theory and discrete calculus.

Visiting Professor

2007 – 2008

- Undergraduate teaching: AST 192 - Stars, Galaxies and the Universe.
- Research: string quantization in pp-wave backgrounds.
- Journal paper review.

University of Cambridge
Cambridge, UK

Postdoctoral Research Associate (DAMTP¹)

2005 – 2007

- Research: pure spinor formalism of superstring theory, strings in pp-waves.
- Journal paper review.

University of Kentucky
Lexington KY USA

Postdoctoral Scholar

2003 – 2005

- Research: 2D string theory, non-BPS D-branes in string theory.
- Journal paper review.

Pennsylvania State University
University Park PA USA

Visiting Graduate Student

2001 – 2002

- Teaching Assistant in General Physics.
- Research: string field theory.

Harish-Chandra Research Institute
Prayagraj UP India

Graduate Student

1997 – 2002

- Research: Green-Schwarz formalism of superstring theory, non-BPS D-branes, string field theory.
- Teaching Assistant in Quantum Field Theory.
- Special lectures on Physics for school students.

NOTABLE VISITS

University of North Carolina
Raleigh NC USA

Visiting Professor

December 2024

University of Kentucky
Lexington KY USA

Visiting Professor

December 2024 - February 2025

August – December 2023

May 2019

July – August 2016

C. N. Yang Institute for Theoretical Physics, Stony Brook University
Stony Brook NY USA

Visiting Professor

September 2016

Visiting Postdoc

March 2006

¹Department of Applied Mathematics & Theoretical Physics

McGill University
Montreal, Canada

Visiting Professor

September 2016

October 2009

Bogoliubov Laboratory of Theoretical Physics, JINR
Dubna, Russia

Visiting Professor

July – August 2015

Indian Association for the Cultivation of Science
Kolkata WB India

Visiting Professor

March 2016

August 2008

Institute of Physics
Bhubaneswar OD India

Visiting Professor

December 2014

March 2010

Harish-Chandra Research Institute
Prayagraj UP India

Visiting Professor

October 2014

November 2011

April 2009

Joint Institute of Nuclear Research (JINR)
Dubna, Russia

India-JINR forum

June 2014

Czech Technical University
Prague, Czech Republic

Conference

August 2011

Tata Institute of Fundamental Research
Mumbai MH India

Visiting Professor

September 2009

Centre for High Energy Physics, Indian Institute of Science
Bangalore KA India

Visiting Professor

September 2009

Purdue University
West Lafayette IN USA

Visiting Postdoc

October 2006

CERN, Theory Division
Meyrin, Geneva, Switzerland

Visiting Researcher

June – July 2006

Enrico Fermi Institute, University of Chicago
Chicago IL USA

Visiting Postdoc

March 2006

University of Southern California
Los Angeles CA USA

Visiting Postdoc

March 2005

University of California, Los Angeles
Los Angeles CA USA

Visiting Postdoc

March 2005

California Institute of Technology
Pasadena CA USA

Visiting Postdoc

March 2005

DAMTP, University of Cambridge
Cambridge, UK

Visiting Graduate Student

July 2004

The Michigan Center for Theoretical Physics, University of Michigan
Ann Arbor MI USA

“Young String Theorist” junior visitor program

September 2003

Ohio State University
Columbus OH USA

Visiting Graduate Student

January 2002

Kavli Institute for Theoretical Physics, UCSB
Santa Barbara CA USA

Visiting Graduate Student

May – June 2001

International Centre for Theoretical Physics
Trieste Italy

Visiting Graduate Student

April 2001

Indian Institute of Technology, Kharagpur
Kharagpur WB India

Visiting Graduate Student

December 2000

RESEARCH SEMINARS

Tempered Distribution Theory on a Lattice

University of Kentucky
Lexington KY USA

January 2025

A Proposal for a Symmetry Preserving UV Cutoff

North Carolina State University
Raleigh NC USA

December 2024

Miami 2024 Physics Conference
Miami FL USA

Construction of Poincaré Invariant Theories on a Lattice

University of Kentucky
Lexington KY USA

December 2023

A Covariant Lattice Approach and its Application to String Bits

University of Kentucky
Lexington KY USA

September 2020

Covariant String Bits

Chennai Strings Meeting 2019
Chennai TN India

November 2019

A Non-perturbative Approach to Self-force Problem

University of Kentucky
Lexington KY USA

May 2019

Small String Quantization in Curved Space

Chennai Strings Meeting 2018
Chennai TN India

October 2018

Small String Quantization in Curved Space and Tubular Geometry

C. N. Yang Institute for Theoretical Physics
Stony Brook NY USA

September 2016

McGill University
Montreal, Canada

September 2016

University of Kentucky
Lexington KY USA

August 2016

Towards a Theory of Conformal String Bits

*Indian Association for the Cultivation of Science
Kolkata WB India*

March 2016

*Developments in String Perturbation Theory (workshop)
Harish-Chandra Research Institute
Prayagraj UP India*

February 2016

Tubular Geometry in Loop Space and Non-Linear Sigma Model

*Supersymmetries and Quantum Symmetries - SQS'2015 (conference)
Bogoliubov Laboratory of Theoretical Physics, JINR
Dubna, Russia*

August 2015

Loop Space Quantum Mechanics

*Bogoliubov Laboratory of Theoretical Physics, JINR
Dubna, Russia*

July 2015

Strings in Curved Spacetime and Tubular Geometry

*Institute of Physics
Bhubaneswar OD India*

December 2014

*Harish-Chandra Research Institute
Prayagraj UP India*

February 2016

Non-Linear Sigma Model, Loop Space and Tubular Geometry

*Joint Institute for Nuclear Research (as part of India-JINR forum)
Dubna, Russia*

June 2014

Towards a Loop Space Description of Non-linear Sigma Model

*International Conference on Mathematical Modeling in Physical Sciences
Budapest, Hungary*

September 2012

On a Semi-classical Limit of Loop Space Quantum Mechanics

*National Strings Meeting
University of Delhi
Delhi UP India*

December 2011

*Harish-Chandra Research Institute
Prayagraj UP India*

November 2011

Tubular Neighborhood of Target Manifold in Non-linear Sigma Model

*Seventh International Symposium on Quantum Theory and Symmetries
Czech Technical University
Prague, Czech Republic*

August 2011

DeWitt-Virasoro Construction

Field Theoretic Aspects of Gravity (conference)
H. N. B. Garhwal University
Srinagar, India

April 2010

From Worldsheet to Spacetime

Institute of Physics
Bhubaneswar OD India

March 2010

A Phase-Space Operator Method for String Worldsheet Theory and General Covariance

McGill University
Montreal, Canada

October 2009

Tata Institute of Fundamental Research
Mumbai MH India

September 2009

Centre for High Energy Physics, Indian Institute of Science
Bangalore KA India

September 2009

Sixth International Symposium on Quantum Theory and Symmetries
University of Kentucky
Lexington KY USA

July 2009

Conformal Invariance of Superstrings in Type IIB R-R Plane Wave Background

Harish-Chandra Research Institute
Prayagraj UP India

April 2009

Conformal Field Theories for Bosonic Strings in pp-Waves

Indian Association for the Cultivation of Science
Kolkata WB India

August 2008

A Universality in pp-Waves

Institute of Physics
Bhubaneswar OD India

January 2007

Field Theoretic Aspects of Gravity (conference)
Goa, India

December 2006

Centre for High Energy Physics, Indian Institute of Science
Bangalore KA India

December 2006

Indian Strings Meeting 2006 (international conference)
Puri OD India

December 2006

Saha Institute of Nuclear Physics
Kolkata WB India

December 2006

A Universal Sector of Field/String Configurations in pp-Waves

*Purdue University
West Lafayette IN USA*

October 2006

*CERN Theory Division
Meyrin, Geneva, Switzerland*

June 2006

Tachyon Condensation and Non-BPS D-Branes in a Ramond-Ramond Plane Wave Background

*University of Kentucky
Lexington KY USA*

March 2006

*Enrico Fermi Institute, University of Chicago
Chicago IL USA*

March 2006

*C. N. Yang Institute for Theoretical Physics, Stony Brook University
Stony Brook NY USA*

March 2006

*Great Lakes Strings Conference
University of Michigan
Ann Arbor MI USA*

March 2006

Non-BPS D-Branes in Light-Cone Green-Schwarz Formalism

*University of Southern California
Los Angeles CA USA*

March 2005

*University of California, Los Angeles
Los Angeles CA USA*

March 2005

*California Institute of Technology
Pasadena CA USA*

March 2005

On the Problem of Particle Production in $c=1$ Matrix Model

*DAMTP, University of Cambridge
Cambridge, UK*

July 2004

Rolling Tachyon with Electric Field and Fundamental Strings

*The Michigan Center for Theoretical Physics, University of Michigan
Ann Arbor MI USA*

September 2003

Decay of Unstable D-Branes with Electric Field

*Indian Strings Meeting 2002 (international conference)
Harish-Chandra Research Institute
Prayagraj UP India*

December 2002

D-Branes in Vacuum String Field Theory

*University of Kentucky
Lexington KY USA*

January 2002

*Ohio State University
Columbus OH USA*

January 2002

*Pennsylvania State University
University Park PA USA*

November 2001

Unstable Non-BPS D-branes of Type II String Theories in Light-Cone Green-Schwarz Formalism

*Kavli Institute for Theoretical Physics, UCSB (students' journal club presentation)
Santa Barbara CA USA*

June 2001

*International Centre for Theoretical Physics
Trieste, Italy*

April 2001

*Indian Institute of Technology, Kharagpur
Kharagpur WB India*

December 2000