



ICTS

INTERNATIONAL
CENTRE *for*
THEORETICAL
SCIENCES

TATA INSTITUTE OF FUNDAMENTAL RESEARCH



An overview of ICTS

Rajesh Gopakumar

The ICTS Campus - Imagined?



INTERNATIONAL
CENTRE for
THEORETICAL
SCIENCES

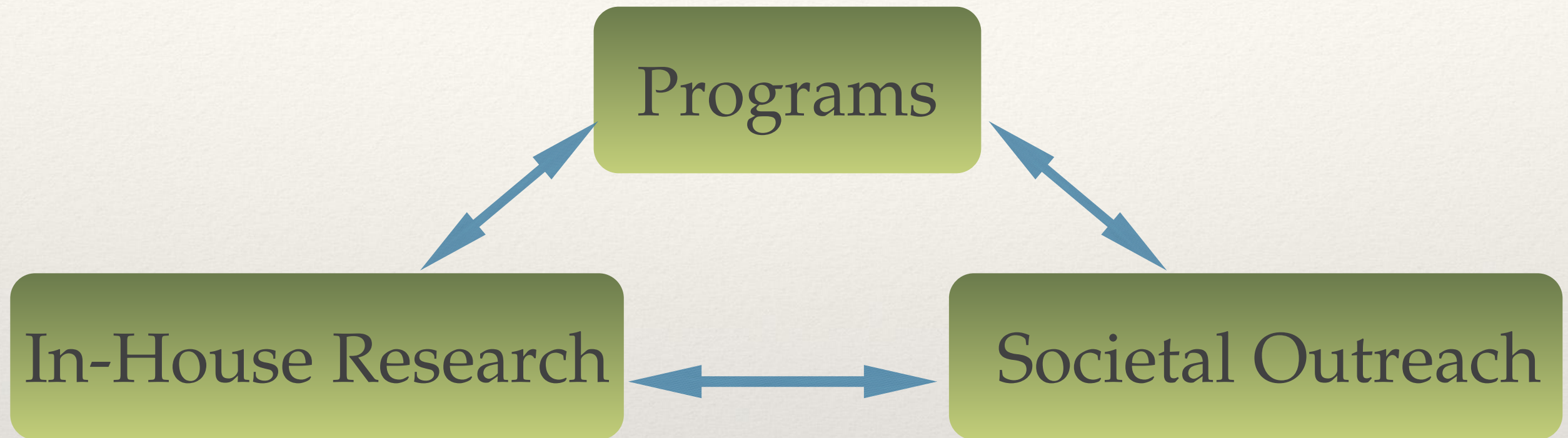


VENKATARAMANAN
ASSOCIATES
ARCHITECTURE · URBAN DESIGN

The ICTS Campus - Realised!

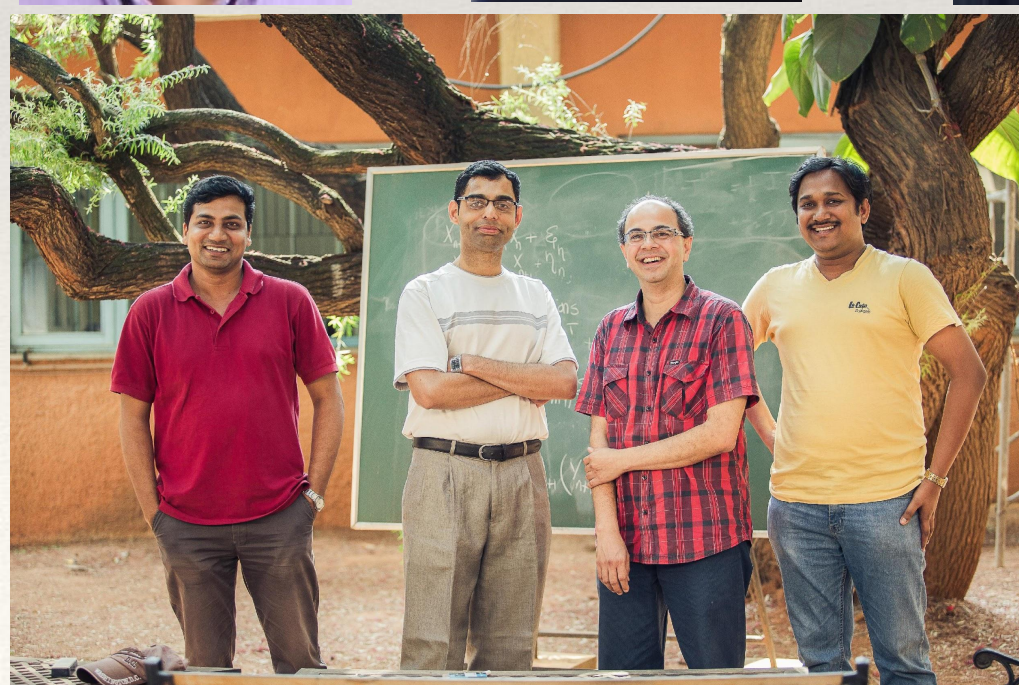
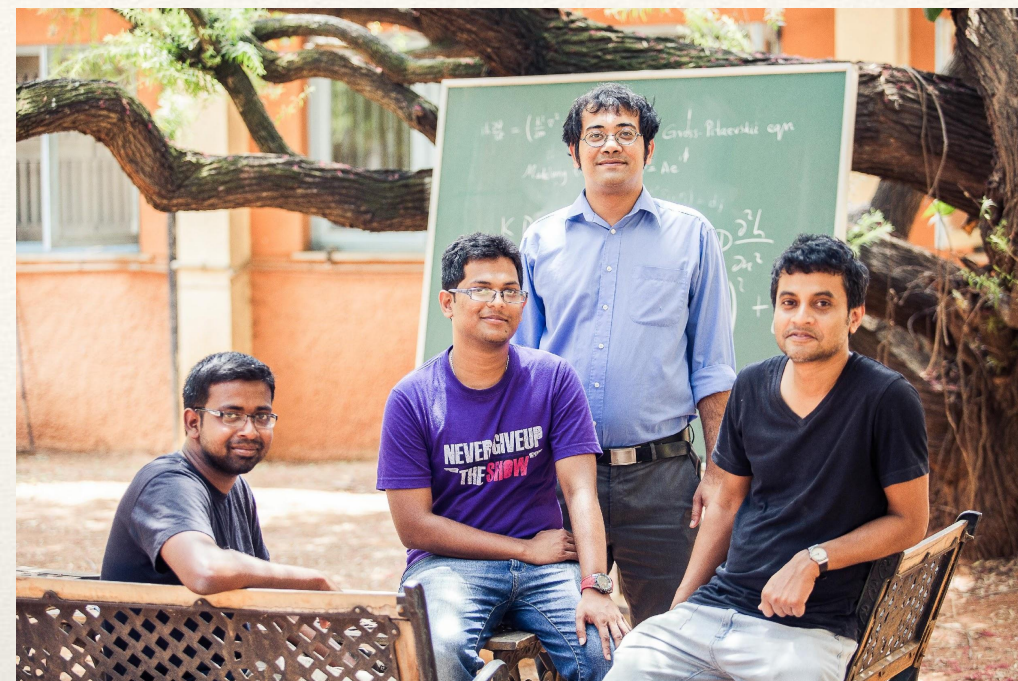
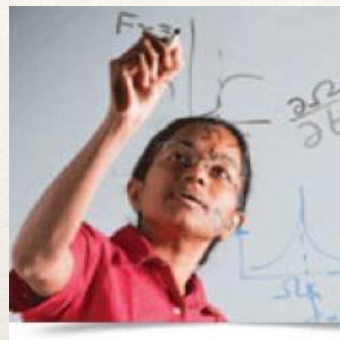


ICTS and its Mandate

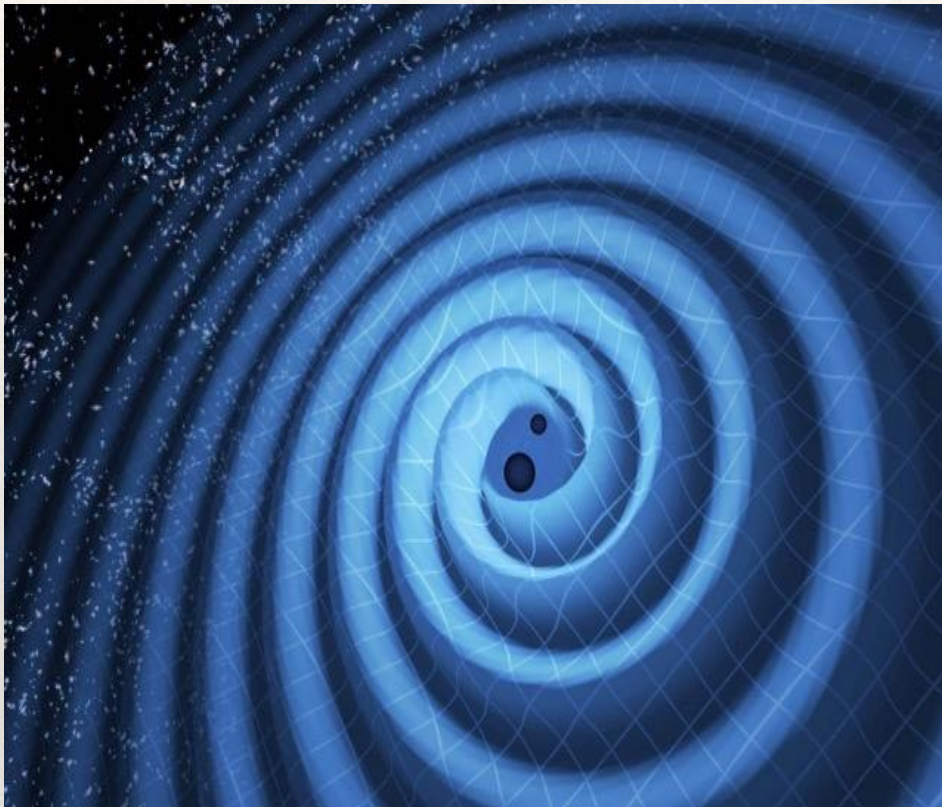


- Modelled after KITP, Newton Institute-Cambridge, ICTP, IAS-Princeton but with **significant innovations**.
- **Unique** institution in India, even internationally.
- Holds out **immense possibilities** for Indian Science.

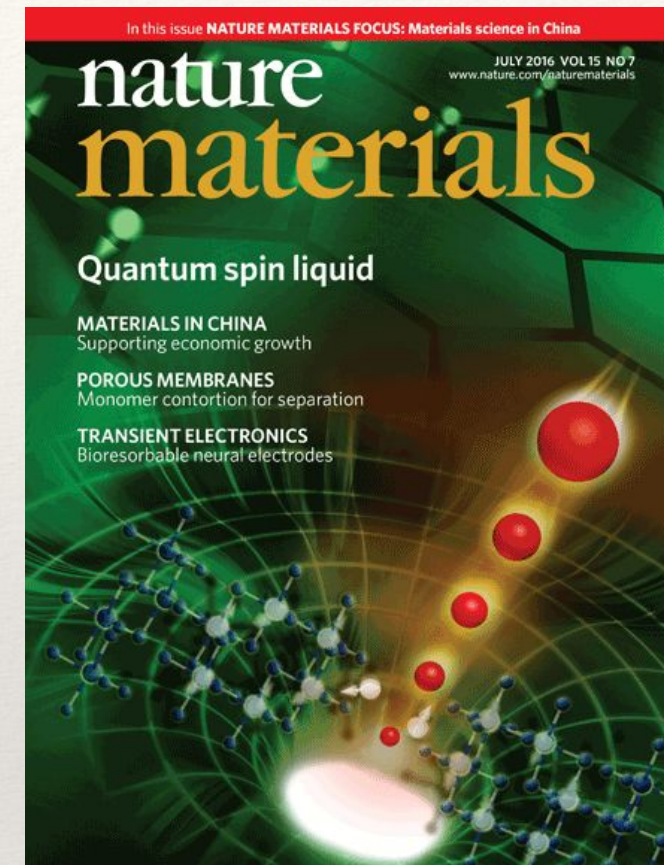
ICTS Research



ICTS Research - 2016 Highlights



- Special Breakthrough Prize for LIGO discovery (May 2016)
- ICTS team of P. Ajith, Abhirup Ghosh, Archisman Ghosh, Arunava Mukherjee, Chandrakant Mishra, Nathan Johnson-McDaniel and Bala Iyer.



Work of Subhro Bhattacharjee and collaborators on experimental realisation of Kitaev spin liquid on a honeycomb lattice feature as cover story in Jul. 2016

ICTS Programs



**INTERNATIONAL
CENTRE FOR
THEORETICAL
SCIENCES**

new sponsors of international institutes

Discussion Meeting



**INFORMATION PROCESSING
IN BIOLOGICAL SYSTEMS**

4TH TO 7TH JANUARY 2014

**RAMANUJAN LECTURE HALL,
ICTS CAMPUS, BANGALORE**

From the vast repertoire of genes in a genome, to the molecules and neural codes, information in various scales and forms brings to self-organization. Living systems process this information to an astonishing degree of accuracy and generate the complex patterns of life. Theoretical, mathematical, arguments, and findings are collaborating increasingly to uncover the real of information in biological processes. This discussion meeting aims to focus on such advances in the general perception of information processing and self-organization in living systems.

Sponsors

- Vijay Balachandran, Utkh Pampurthi, USA
- Usp Matha, IISc-TIFR, India
- Bernd Geyer-Kleinschmidt, TIFR, India
- Stephan M. Goll, IRTG, To Drexler, Germany
- Jens H. Jørgensen, Uppsala University, USA
- Gerald Segal, Columbia Univ, USA
- Ganesan S. Narayana, IISc, India
- Shantaram Ramakrishna, Harvard Univ, USA
- Kishor Rao, IISc-TIFR, India
- Gulzar Singh, Francis Crick Institute, UK
- G. V. Subrahmanian, IAS, Singapore
- Caroline Usher, MIT, USA

No co-sponsor

Organizing Committee

- Vijay Balachandran, Utkh Pampurthi, USA
- Patrick Bates, ICS
- Sandeep Krishna, IISc
- Vijay Kumar Krishnamoorthy, ICS
- Rukund Thattai, IISc

Sponsored in part by the Ramana Foundation named after "The first informal teacher" of ICTS

☎ 080 7340 8300

✉ prings@ICTS.ac.in



Registration form: www.icts.ac.in



INTERNATIONAL CENTRE FOR THEORETICAL SCIENCES
AN INSTITUTE OF THE INDIAN ACADEMY OF SCIENCES



**THE ICTS
ABDUS SALAM
MEMORIAL LECTURE**





Make Salam a part of the tradition of the Abdus Salam Memorial Lecture series, in 1979 he shared the Nobel Prize for Physics with Steven Weinberg and Sheldon Glashow, for his discovery of the mechanism by which the weak force acquires its mass. Salam is also a pioneer in the study of the origin of the universe. He has contributed to the study of quantum fields and also to the construction of particle detectors in various particle accelerators.

Overview of Particle Physics after the Higgs Discovery



The discovery of the Higgs boson has been one of the greatest scientific achievements fundamental science in decades, establishing the validity of the Standard Model of particle physics beyond reasonable doubt. It has also led to very strong constraints on what new physics may exist beyond the Standard Model and is starting to put doubts on sacred principles of physics such as naturalness. An overview is presented on what avenues are left available to go beyond the Standard Model and address its main open questions such as dark energy and dark matter. A brief account will be presented on Abdus Salam's vision regarding fundamental physics and science policy.

Overview of Particle Physics after the Higgs Discovery



Dr. Fernando Quivodo is currently a research fellow at the Abdus Salam Memorial Lecture at ICTS, where he is also a visiting professor. He is currently a Professor of Theoretical Physics and Quantum Field Theory at the University of Valencia, Spain. He has been a member of the Abdus Salam Memorial Lecture series since 2010. He has been a member of the Abdus Salam Memorial Lecture series since 2010. He has been a member of the Abdus Salam Memorial Lecture series since 2010.

DATE : Tuesday, 10 December 2013
TIME : 5:30 pm
VENUE : Faculty Hall, IISc, Bangalore

IAEA WORLDWIDE

Website : www.icts.res.in

TEL : 080-7250-1030

Web : www.icts.res.in



INSTITUTIONAL CENTRE FOR THEORETICAL SCIENCES
 AN INSTITUTE OF A UNIVERSITY OF MADRAS

ICTS DISCUSSION MEETING

The Legacy of Emmy Noether

In ICTS-TIFR, we shall celebrate the work of this remarkable mathematician and physicist in these two day discussion meet.

The topics will include the following:

Noether's Theorem in Classical Dynamics:
 Continuous Symmetries and Conservation Laws for physical systems.

Applications of Noether's Theorem in particle physics, condensed matter physics, gravity and string theory.

Noether's pioneering contributions to:
 Commutative Algebra and other fields of pure mathematics.

Organizers

- A. Adinolfi - CAM TIFR, Bangalore
- Rohini Roy - ICTS-TIFR, Bangalore
- S. Iyengar - ICTS-TIFR, Bangalore



Emmy Noether (1882-1935) was one of the greatest contributors to abstract algebra. Her theorem provides a systematic way to discover symmetries. Noether's mathematical work has been described as being "unique". In the last 100 years she made contributions to the theories of algebra, invariant theory and number theory, field theory, differential equations, the calculus of variations, fluid dynamics, and has been called "one of the most important mathematical theorems ever proved" for guiding development of modern physics". In the second half of 1930-35, she began work that changed the way we think about algebra. In fact, many great mathematicians (Theory of Groups by Helmut Wielandt) described the theory of algebras in combination with this work with extraordinary elegance. This was a unique use of the ascending chain condition, a concept belonging to ring theory (Noether was right). In the third aspect (1937-40), she published works on noncommutative algebras and hyperalgebraic varieties and called the representation theory of groups with theory of modules and shears. A tribute to her for her productivity. Noether never got married but she was in contact with several great physicists and mathematicians, some of whom for whom she published some important works, such as algebraic geometry. (Source: Wikipedia)

29 - 30 August, 2016

VENUE :
 Madhava lecture hall, ICTS Bangalore

Application deadline: 01 JULY 2016

Interested applicants may visit
http://www.icts.res.in/discussion_meeting/2016/

www.icts.res.in
 programs@icts.res.in
 080-27390000



INSTITUTION FOR
TRANSNATIONAL
SCIENTIFIC
COOPERATION

ICTS PUBLIC LECTURE

Scaling of Electronic Devices: From the Vacuum Tube to a Single-Molecule Diode

More electronic devices made today are transistors in that sense they function similarly. However, they have evolved in the 1940s, first up to big vacuum tube transistors and then to the transistor. They continue to evolve which has a characteristic dimension only being a nanometer. Further miniaturization requires new ideas, understanding of quantum transport, as well as materials and techniques for creating these devices, making it a more involved, multi-disciplinary phenomena. The ultimate miniaturization of devices at being down to the size of the atomic scale. This device could be using a single molecule instead of a silicon atom, but we need to get a better understanding of molecular and atomic. In fact, with such small transistors, vibrations could cause single molecule results and that prevents our results. Therefore, we have with a high end, off-the-shelf device to create.

Latha Venkataraman Columbia University

Latha Venkataraman received her Bachelor's degree in Physics from Massachusetts Institute of Technology in 1992 and her Ph.D in Physics from Harvard University in 1999 working under the guidance of Prof. Charles L. Overton. She worked as a research scientist at Oracle Corporation from 1999 to 2002. In 2003, she joined Columbia University as a research scientist. She then joined the faculty of Department of Applied Physics and Applied Mathematics at Columbia University in 2007 where she is currently an Associate Professor.

Date Thursday, January 28, 2016
Time 4:30 pm
Venue Kamunaja lecture hall,
ICTS, Bangalore

Transportation can be arranged for groups from schools/colleges. Please contact organizers.

All are welcome.

CONTACT DETAILS: Email: programs@icts.res.in

Tel: 081 4802 4000

Web: www.icts.res.in

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KCTC
 KARNATAKA
 CENTRE FOR
 TECHNICAL
 EDUCATION
 100, SIDDHARTH ROAD, BANGALORE



**SUBRAMANYAN
 CHANDRASEKHAR
 LECTURES**

Subramanyan Chandrasekhar lectures are delivered by eminent scientists in Bangalore with developments in their areas of expertise. The lectures are in the areas of interest to regional scientific academies with increasing use, paragraph of interest, in facilitating Subramanyan. There are several in operation.



Herbert Spohn is a German mathematical physicist working in contemporary fields of physics, in particular on theory of quantum, spectrum of identity, vector spaces, and quantum mechanics. His research is in quantum physics and mathematical physics and mathematical physics.

Herbert Spohn
 Institute of Mathematics, Munich

Random Matrix Theory and the dynamics of nonequilibrium interfaces

In a very influential work, Karim, Parisi, and Zhang studied the dynamics of growing interfaces in particular their self-similar structures. For two-dimensional flows, two-dimensional interfaces, there is a surprising link to Random Matrix Theory. With this insight, beyond asymptotic, scaling functions have been computed. Recently such predictions have been confirmed in experiments on thin turbulent liquid crystal films. In the talk introduction is provided to these advances in nonequilibrium matrix of physics.

In 2010 he was awarded the Ramanujan Research Prize for Mathematical Physics, the Spohn Research Prize for Mathematical Physics, and the Spohn Research Prize for Mathematical Physics, and the Spohn Research Prize for Mathematical Physics.

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Lectures 1: Tues, 27 October 2015, at 6:00 pm
Lectures 2: Wed, 28 October 2015, at 10:00 am
Lectures 3: Thurs, 29 October 2015, at 10:00 am

Venue: Ramakrishna lecture hall, KCTC complex, Bangalore



**INTERNATIONAL
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SCIENCES**

TATA INSTITUTE OF FUNDAMENTAL RESEARCH



ICTS Summer Research Program on

Dynamics of Complex Systems

Geophysical Phenomena

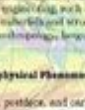
Program dates: 23 May, 2016 – 23 Oct, 2016

This program is first-of-its-kind in India with specific focus to provide research in experience and training to highly motivated graduate and young researchers in the interdisciplinary field of Geodesy, dynamical systems theory that has application in diverse fields and includes, among, such as the study of biological systems, atmospheric, oceanic, hydrological and structural systems and social sciences, astrophysics and astrophysics, linguistics, economics and social sciences, astrophysics and astrophysics, linguistics, and many others.

The specific theme for the summer 2016 is **"Geophysical Phenomena"**.

We especially encourage early graduate students, postdocs, and early faculty for possibly exceptional financial considerations, provided to apply for any one of the following activities:

- (A) Two-week preparatory summer school; (B) a summer research project; (C) Collaborative academic visits; (D) Research a Summer project.



Principle lecturers for the two week preparatory summer school

Jeyanta K. Bhattacharya, IISc, Kolkata: "Introduction to Turbulence"

Gregory Gershgorin, University of Illinois: "Stochastic Models and Structures in Climate Science"

Harish Chandraiah, ICTS-TIFR, Hyderabad: "Introduction to Agent-Based Modeling"

Michael Riegler, University of Bayreuth, Germany: "Biological climate models with long-range"

Todd Hall, UCL, London: "DQ"

Jim Bulmer, CCRS, St. Quebec: "Thermodynamics of mixing: from Ocean to Atmosphere"

Chris Lee, Thailand: "Complexity of Dynamical Systems: Modeling, analysis and management"

For details of the application process, please visit the program web page:
<http://www.icts.res.in/programs/2016-17>

Deadline: Sunday 20 March, 2016

Sponsors

Govt. of India (DST)

Ministry of Science (MHRD)

Ministry of Education (MHRD)

Ministry of Science (MHRD)

Ministry of Education (MHRD)

Ministry of Science (MHRD)

Ministry of Education (MHRD)

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INTERNATIONAL
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TIFR INSTITUTE OF FUNDAMENTAL RESEARCH

School on Current Frontiers of Condensed Matter Research

(June 2nd - June 29th, 2016)

School Lecturers:

- Rohan Dasgupta (TIFR)
- Jaimevinder Jain, (Pune State)
- Mohit Randeria, (GSI)
- Rainer Sachdev, (Harvard)
- Jay D. Sze, (Maryland)
- Vijay Varma, (IISc)
- Dipanjan Sen, (IISc)

Organizers:

- Indira Bhattacharjee (IITM)
- Jaimevinder Jain (Pune State)
- H. R. Kishoreamurthy (IISc)
- Rakesh Kumar Jangam (IISc)
- Raghav Iyer (TIFR)

Understanding strongly interacting quantum many body systems is one of the major frontiers in present day physics. Condensed matter physics provides a wide panoply of systems where strong interaction between constituent particles plays a dominant role; some examples of such systems are high temperature superconductors, spin liquids, fractional quantum Hall systems, ultracold atomic topological insulators/superconductors, transition metal oxides, and their heterostructures. Many of these materials have added feature that they have strong spin-orbit coupling. The interplay of strong interactions and strong spin-orbit coupling is presently a frontier area of research in condensed matter physics.

This program aims to introduce graduate students, post docs and young researchers to different aspects of strongly interacting systems focusing on ideas which are currently animating the condensed matter community world-wide. The program will consist of a **working pedagogical lectures from 29.06.2016 to 26.06.2016** on frontier areas, followed by three days of a **discussion meeting from 27.06.2016 to 29.06.2016 on related topics** presenting and discussing the latest research in these areas. The program will be held in the vibrant and picturesque ICTS campus at Haverhill, Bangalore.



For details of application process please visit the program website
<http://www.icts.res.in/programs/discuss16>

Deadline: May 20, 2016

email@ictm16@icts.res.in

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CENTRE for
INTEGRATED
NETWORKS

THE INSTITUTE OF SCIENCE & TECHNOLOGY

DISCUSSION MEETING

Games, Epidemics and Behavior

27 June – 1 July, 2016

Venue: Madhava Lecture Hall, ICTS, Bangalore

The two main goals of this discussion meeting are:

1. To explore the foundations of policy design for controlling epidemics, using a broad class of epidemic games on complex networks involving uncertainty in network information, temporal evolution and learning
2. To gain a better understanding of information flow that could assist in elucidating the complex mechanisms that underlie a variety of human dynamics and organizations giving rise to the ongoing Cartesian style explosion in social media.

It will bring together topics in mathematical epidemiology, game theory and social agent systems, discrete dynamical systems, complex networks and economics, and will present new opportunities and opportunities for collaboration to participants.

Alan Turing lecture by Prof. Christopher Moore on "Complexity, Phase Transitions and Interference" as a part of this discussion meeting – for more details visit
<http://www.icts.res.in/lecture/3/details/1674>

Registration deadline: 31 May 2016

Sample of speakers

Pedro Pablo Baez, EPFL, Geneva
 Daley Gell, CPT, GENEVA
 R. Gershwin, University of Bristol
 Maurice Goh, Université de Caen
 Cryn Moore, Institute of Science & Technology
 Y. Nishikawa, USC
 Delia Padellaro, Politecnico di Milano
 Stefano Shalizi, USC
 Shashi Shekhar, IISR

Organizers

Rupam Kumar Choudhury
 King George Lyapunov
 Benjamin Bercowski
 Amit Sundaram

More details are available at
<http://www.icts.res.in/discussion-a-meeting-pg2016/>



CURRICULUM


prog@icts.res.in

[080-6730-6000](tel:080-6730-6000)

www.icts.res.in







Einstein lectures

FROM A LIFETIME WORKS RECOLLECTING THE JOURNALS OF
ALBERT EINSTEIN'S PHYSICS, THEORY OF RELATIVITY

Organized by

Bruce Allen

*Max Planck Institute for Physics,
Max Planck Society, Germany*

Einstein's legacy, and the search for gravitational waves

*History's "grand theory of relativity" has revolutionized
conceptions of reality, of the physical world. In Einstein's
handwriting of light and mechanics, the role, and the collapse
of absolute time itself, reveals Einstein's position in
the world's understanding of reality, positive, world
of perception. But through through work at the speed
of light, in the coming days, in the generation of
high precision of time, that another problem is likely
to be solved. Einstein's of these ideas, The path will
be taken to see the universe in a new
perspective and perspective.*

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perspective and perspective.*



8 Nov 2015 (Friday) at 4pm
Faculty Hall, Indian Institute of Space
Science



INTERNATIONAL
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THEORETICAL SCIENCE

THE INSTITUTE OF COMBINATORIAL RESEARCH

ALAN TURING LECTURES IN BIOLOGY



The Alan Turing Lecture Series is a series of lectures in the fields of biology, physics, chemistry, mathematics, and computer science. The series is named after the great British mathematician and computer scientist, Alan Turing. The series is held at the Institute of Combinatorial Research, the University of Cambridge.

The series is held in the form of a series of lectures, each lasting about 45 minutes. The lectures are held in the form of a series of lectures, each lasting about 45 minutes. The lectures are held in the form of a series of lectures, each lasting about 45 minutes.





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TATA INSTITUTE OF FUNDAMENTAL RESEARCH

Second Bangalore School on
**Population
Genetics**

Research and education
in population genetics and
population genomics
provide the bridge between
biology and mathematics
to understand
evolution, the origin and
spread of infectious
diseases, and the
evolution of the human
genome.



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SCIENCES

2015 AWARDS OF FUNDAMENTAL RESEARCH

ICTS DISCUSSION MEETING
2016 APRIL 4 - 8

THE FUTURE OF FUNDAMENTAL SCIENCE



**INTERNATIONAL
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TATA INSTITUTE OF FUNDAMENTAL RESEARCH

Modern Finance and Macroeconomics : A Multidisciplinary Approach

22 December, 2015 – 02 January, 2016
ICTS Campus, Bangalore, India

The financial institutions of 2008 in the US shook markets and the subsequent international credit crunch made it clear that the

NATURAL SCIENCES



**INTERNATIONAL CENTRE
for THEORETICAL
SCIENCES**
INDIAN INSTITUTE OF TECHNOLOGY, MADRAS

**RAMAN
RESEARCH
INSTITUTE**



Bangalore School on Statistical Physics - VII

(a joint ICTS-RRI program)

1 – 15 July 2016

Venue: ICTS, Bangalore, India

This is a pedagogical school, aimed at bridging the gap between masters-level courses and topics in statistical physics at the frontier of current research. It is intended for Ph.D. students, post-doctoral fellows and interested faculty members.



ICTS
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DATA INSTITUTE OF FUNDAMENTAL RESEARCH

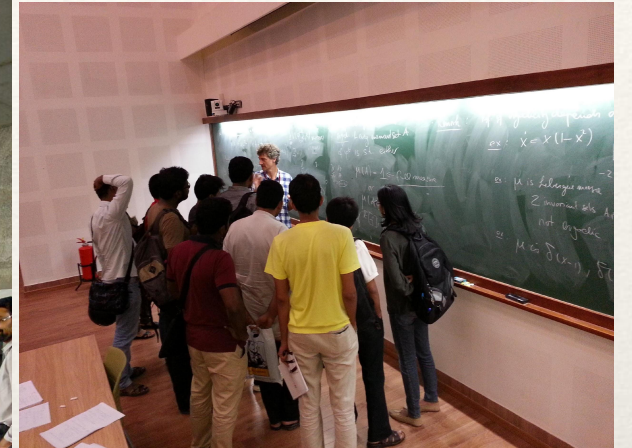
SPEAKERS:
Markus Amel
Carsten Brinkner
Dmitry Budker
Daniel Buckingham
Catalina Caracciolo
Luis Diósi

ICTS Programs - Directions

- Platform for new initiatives/thrusts in the country.
- Place to gather researchers to brainstorm; incubate new ideas; chart out roadmaps...
 1. Scientific Discovery through Intensive Data Exploration (2011).
 2. Mathematical Perspectives on Clouds, Climate and Tropical Meteorology (2013).
 3. Modern Trends in Electron Transfer Chem.: From Molecular Electronics to Devices (2015).
 4. Laser Plasma Acceleration (2017).
- Aim to be a hub that connects scientists, engineers and industry; give leadership to strengthen chain between theoretical sciences, exptal. science, engg. and industry.

ICTS Programs - Impact

- 116 Programs, 11 upcoming
- 11339 participants (7708 Indian + 3631 foreign);
- 2550 speakers (1050 Indian + 1500 foreign). Approx. 5000 talks.
- 42 Discussion meetings, Chandrasekhar (15), Ramanujan (5) & Turing (3) Lecture Series.
- Also Abdus Salam Lectures (4), ICTS Distinguished Lectures (9).
- Great demand - 2017 filled calendar!



ICTS Programs - A Sampling

1. Random Matrix theory and Applications
2. Cosmology with the Cosmic Microwave Background
3. Correlated Electrons and Frustrated Magnetism
4. Monsoon Workshop on String Theory
5. Masterclass in Nanoscale Physics and Devices
6. Mechanical Manipulations and Responses at the Scale of the Cell and beyond
7. The Role of Theory in Biology
8. Extra Galactic Relativistic Jets
9. Games, Epidemics and Behaviour.
10. Macroeconomics of Finance: A Multidisciplinary Approach



THE ARCHITECTURE OF BIOLOGICAL COMPLEXITY

BY SYDNEY BRENNER

Measurements of the cosmos based on a wide variety of methods are in good agreement with the contents and history of the universe. We focus on observations that are accurate, quantitative, and understanding the universe when it was less than a billionth of a second old to test specific models of how the universe was born. We consider the framework in which to think about cosmological observations with an emphasis on results from the Wilkinson Microwave Anisotropy Probe (WMAP).

PUBLIC LECTURE BY PROF. LYMAN PAGE
PHYSICS DEPARTMENT, PRINCETON, USA
IN ASSOCIATION WITH NEHRU SCIENCE CENTRE
On 14 October 2012 at 4 PM
Venue: TIFR Auditorium, TIFR, Mumbai
Contact: 022-2570 2207

Observing the Birth of the Universe

Measurements of the cosmos based on a wide variety of methods are in good agreement with the contents and history of the universe. We focus on observations that are accurate, quantitative, and understanding the universe when it was less than a billionth of a second old to test specific models of how the universe was born. We consider the framework in which to think about cosmological observations with an emphasis on results from the Wilkinson Microwave Anisotropy Probe (WMAP).

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Contact: 022-2570 2207

POETRY DRUMMING & MATHEMATICS

Manu Bhargava (Physician University)

June 30, 2015, 5:30 PM, Chaitin University Auditorium, Bangalore
All are welcome. Booking: 080-4567 8901

Holography and Quantum Gravity

27th Sept 2012, 4 PM
Prof. William Bialek

Statistical mechanics for biological networks

Whispers from Space: The Detection of Gravitational Waves from a Binary Black Hole Merger

Stanley E. Whitcomb

Public Lectures 1/2 TATA Auditorium, IISc, Bangalore

Brain Brawn and Behaviour

Several groups the world over are trying to understand how the capabilities of the nervous system have evolved in relation to brain evolution and through development from a pre-existing pattern of activity. Movement, it has been tentatively said, is the output of the brain, and the brain is the output of the environment. This is a very difficult task for understanding the brain. Our laboratory is particularly active in this area.

K. VijayRaghavan

New Dialogues: Entanglement, Holography & Renormalization

Robert Myers

Public Lectures 1/2 TATA Auditorium, IISc, Bangalore

Strings and the Magic of Extra Dimensions

Cumrun Vafa

Public Lecture by Cumrun Vafa, Harvard University

General Relativity

100 Years of General Relativity

June 26, 2015, 12 PM
Faculty Hall, Indian Institute of Science, Bangalore, India

Klaus von Klitzing, Nobel Laureate

How long is 1 Metre?

From ancient length units to modern concepts in metrology

Professor Klaus von Klitzing is a physicist at the Max-Planck-Institut für Festkörperforschung in Stuttgart, Germany.

When Mathematicians Use Geometry to Cut Cloth

Prof. Etienne Ghys

Public Lecture by Prof. Etienne Ghys, University of Geneva

5 MARTIANS OF SCIENCE

Edward Teller, Father of the Hydrogen Bomb and the Other Martians Who Changed the World

Public Lecture by Edward Teller, Los Alamos National Laboratory

Winter School on Quantitative Systems Biology

7-20 December 2015
ICTS Campus, Bangalore, India

Bangalore School on Statistical Physics - VI

(a joint ICTS-BRI program)

21-28 July 2015
Venue: ICTS, Bangalore, India

Subrahmanyan Chandrasekhar Lectures and Discussion Meeting on Advances in GRAPHENE, MAJORANA FERMIONS, QUANTUM COMPUTATION

Public Lecture by Subrahmanyan Chandrasekhar

THE GENERALIZED RAMANUJAN CONJECTURES

Peter Sarnak

Public Lecture by Peter Sarnak, Princeton University

100 YEARS OF GENERAL RELATIVITY

June 26, 2015, 12 PM
Faculty Hall, Indian Institute of Science, Bangalore, India

Structure & Randomness in the Prime Numbers

Terence Tao

Public Lecture by Terence Tao, UCLA

Age of Networks

Jennifer Tour Chayes

Public Lecture by Jennifer Tour Chayes, MIT

Einstein lectures

Clifford M. Will

Public Lecture by Clifford M. Will, USC

Ken Ono

Public Lecture by Ken Ono, University of Maryland

Time, Einstein and the Coolest Stuff in the Universe

William D. Phillips

Public Lecture by William D. Phillips, NIST

QUANTUM MECHANICS & SPACE-TIME IN THE 21ST CENTURY

Nima Arkani-Hamed

Public Lecture by Nima Arkani-Hamed, Harvard University

PARTICLES, GRAVITY & STRINGS

June 27, 2015
Christ Auditorium, Bangalore, India

Summer School on Gravitational Wave Astronomy

25 JULY - AUG 2016, ICTS, BANGALORE

Subrahmanyan Chandrasekhar Lectures and Discussion Meeting on Strongly Correlated Systems: From Models to Materials

Public Lecture by Subrahmanyan Chandrasekhar

Structure & Randomness in the Prime Numbers

Terence Tao

Public Lecture by Terence Tao, UCLA

Black Holes, Waves of Gravity, and Other Warped Ideas of Dr. Einstein

Clifford M. Will

Public Lecture by Clifford M. Will, USC

Ramanujan: The inspirational story and a glimpse of his mathematics

Public Lecture by Ramanujan

Time, Einstein and the Coolest Stuff in the Universe

William D. Phillips

Public Lecture by William D. Phillips, NIST

QUANTUM MECHANICS & SPACE-TIME IN THE 21ST CENTURY

Nima Arkani-Hamed

Public Lecture by Nima Arkani-Hamed, Harvard University

PARTICLES, GRAVITY & STRINGS

June 27, 2015
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Terence Tao

Public Lecture by Terence Tao, UCLA

Structure & Randomness in the Prime Numbers

Terence Tao

Public Lecture by Terence Tao, UCLA

Age of Networks

Jennifer Tour Chayes

Public Lecture by Jennifer Tour Chayes, MIT

Einstein lectures

Clifford M. Will

Public Lecture by Clifford M. Will, USC

Ken Ono

Public Lecture by Ken Ono, University of Maryland

Time, Einstein and the Coolest Stuff in the Universe

William D. Phillips

Public Lecture by William D. Phillips, NIST

QUANTUM MECHANICS & SPACE-TIME IN THE 21ST CENTURY

Nima Arkani-Hamed

Public Lecture by Nima Arkani-Hamed, Harvard University

PARTICLES, GRAVITY & STRINGS

June 27, 2015
Christ Auditorium, Bangalore, India

Summer School on Gravitational Wave Astronomy

25 JULY - AUG 2016, ICTS, BANGALORE

Subrahmanyan Chandrasekhar Lectures and Discussion Meeting on Strongly Correlated Systems: From Models to Materials

Public Lecture by Subrahmanyan Chandrasekhar

Structure & Randomness in the Prime Numbers

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ICTS Outreach - Initiatives

- **Public Lectures** by eminent scientists (Manjul Bhargava, Jennifer Chayes, David Gross, Juan Maldacena, Lyman Page, Stuart Parkin, Sankar Das Sarma, Peter Sarnak, Nathan Seiberg, Andy Strominger, Ashoke Sen, Terence Tao, Kip Thorne, Cumrun Vafa and Latha Venkataraman).
- Lectures on youtube (“**icts talks**”) wildly popular - over **half a million views** in 3.5 years. **8000** subscribers.
- 100 years of General Relativity (2015) & **Einstein Lectures** (partnering with institutions around the country - **small colleges**).
- **Mathematics of Planet Earth** (2013) - global initiative for maths outreach. ICTS was a partner. Exhibition at VITM - 32000 attendees.



ICTS Outreach-Kaapi with Kuriosity

- **Monthly** lecture series with B'lore Planetarium and VITM.
- Informal **talk cum discussion** by scientists from B'lore as well as ICTS program visitors.
- Aims to stimulate curiosity of the public as well as school/college students for science.
- Running successfully since Oct. 2016.



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TATA INSTITUTE OF FUNDAMENTAL RESEARCH



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KAAPI WITH KURIOSITY



Kaapi with Kuriosity is a monthly public lecture series organised by the International Centre for Theoretical Sciences (ICTS-TIFR), in collaboration with the Jawaharlal Nehru Planetarium and the Visvesvaraya Industrial and Technological Museum, Bengaluru.

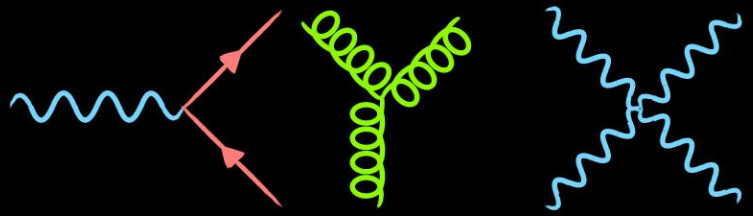
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 080 6730 6000



David Gross

is the Chancellor's Chair Professor of Theoretical Physics and former Director of the Kavli Institute for Theoretical Physics at UCSB. He received his Ph.D. in 1966 at UC Berkeley and was previously Thomas Jones Professor of Mathematical Physics at Princeton University. He has been a central figure in particle physics and string theory. His discovery, with his student Frank Wilczek, of asymptotic freedom—the primary feature of non-Abelian gauge theories—led Gross and Wilczek to the formulation of Quantum Chromodynamics, the theory of the strong nuclear force. This completed the Standard Model, which details the three basic forces of particle physics—the electromagnetic force, the weak force, and the strong force. Gross was awarded the 2004 Nobel Prize in Physics, with Politzer and Wilczek, for this discovery.

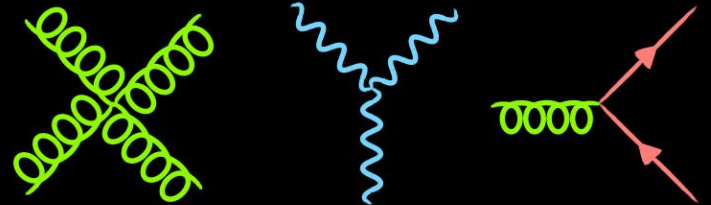
Image source : Wikipedia



My Life in Physics

From Quarks to Strings

This talk will describe the developments in theoretical high energy physics of the last five decades as seen from the perspective of someone who has contributed seminally to our current understanding of the fundamental building blocks of nature.



WHEN & WHERE

4 PM, SATURDAY, 14TH JAN 2017

CHRIST UNIVERSITY,
KURIAKOSE ELIAS AUDITORIUM,
HOSUR ROAD, BENGALURU,
KARNATAKA 560029

ENTRY FREE

INTERNATIONAL CENTRE FOR THEORETICAL SCIENCES, TATA INSTITUTE OF FUNDAMENTAL RESEARCH, SHIVAKOTE, HESARAGHATTA HOBLI, BENGALURU 560089

Thank You
See you again at ICTS