

CURRICULUM VITAE

June, 2016

Hu, Bei-Lok Bernard Professor of Physics, University of Maryland, College Park
胡悲樂 Founding Fellow, Joint Quantum Institute, Univ. Maryland and NIST
 Founding Member, Maryland Center for Fundamental Physics, UMD.

I. PERSONAL DATA

Date and Place of Birth: October 4, 1947, Chungking, China. Citizenship: U.S.A.

Permanent Address: 3153 Physical Sciences Complex

Department of Physics, University of Maryland,

College Park, Maryland 20742-4111

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Fax: MCFP: (301) 314-5649 Physics Dept: (301) 314-9525

UMd Physics webpage: <http://umdphysics.umd.edu/people/faculty/153-hu.html>

Research Groups:

- *Gravitation Theory (GRT) Group:*

<http://umdphysics.umd.edu/research/theoretical/87gravitationaltheory.html>

- *Quantum Coherence and Information (QCI) Theory Group:*

<http://www.physics.umd.edu/qcoh/index.html>

II. EDUCATION

| <i>Date</i> | <i>School</i> | <i>Location</i> | <i>Major</i> | <i>Degree</i> |
|-------------|--------------------------|-----------------|--------------|---------------|
| 1958-64 | Pui Ching Middle School | Hong Kong | Science | High School |
| 1964-67 | University of California | Berkeley | Physics | A.B. |
| 1967-69 | Princeton University | Princeton | Physics | M.A. |
| 1969-72 | Princeton University | Princeton | Physics | Ph.D. |

III. ACADEMIC EXPERIENCE

| <i>Date</i> | <i>Institution</i> | <i>Position</i> |
|-------------------------|---|--|
| June 1972- Jan. 1973 | Princeton University Princeton, N.J. 08540 | Research Associate Physics Department |
| Jan. 1973- Aug. 1973 | Institute for Advanced Study Princeton, N.J. 08540 | Member School of Natural Science |
| Sept.1973- Aug. 1974 | Stanford University Stanford, Calif. 94305 | Research Associate Physics Department |

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|-------------------------|---|--|
| Sept.1974- Jan. 1975 | University of Maryland College Park, Md. 20742 | Postdoctoral Fellow Physics & Astronomy |
| Jan. 1975- Sept.1976 | University of California Berkeley, Calif. 94720 | Research Mathematician Mathematics Department |
| Oct. 1976- May 1977 | Institute for Space Studies NASA, New York, N.Y. 10025 | Research Associate Astrophysics |
| June 1977- Aug. 1979 | University of California Santa Barbara, Calif. 93106 | Research Physicist Physics Department |
| Aug 1980- Now | University of Maryland College Park, MD 20742 | Assist, Assoc. & Full Professor of Physics |

Visiting or Honorary Appointments:

| | | |
|-------------------------|---|--|
| Sept.1979- Aug. 1980 | Harvard University Cambridge, Mass. 02138 | Honorary Research Fellow Lyman Lab. of Physics |
| Jan. 1987- Aug. 1987 | Institute for Advanced Study Princeton, New Jersey 08540 | Member School of Natural Sciences |
| Jan. 1989- June 1990 | Cornell University Ithaca, New York 14853 | Professor of Physics and Research Fellow Newman Lab. of Nuclear Studies |
| April-May 1994 | Newton Institute for Math. Sciences, Cambridge Univ. | Member Geometry and Physics Program |
| Sept.1994- Jan. 1995 | Institute for Advanced Study Visiting Professor | Dyson Visiting Professor School of Natural Sciences |
| Mar-May 2008 | Perimeter Institute of Theoretical Physics, Waterloo, Canada | Visiting Professor |

Short-term Visitor or Lecturer:

| | | |
|------------|--|--|
| July 1982 | Nuffield Foundation, Univ. of Cambridge | Participant and Speaker at the Workshop on the Early Universe |
| Aug. 1982 | Shanghai Normal Univ. | Visiting Professor |
| Sept. 1984 | Erice Int'l School, Italy | Principal Lecturer |
| Nov. 1984 | Raman Institute, India | Visiting Professor |
| July 1985 | Chinese Academy of Sciences | Visiting Professor |
| Aug. 1985 | Yukawa Institute, Kyoto, Japan | Visiting Professor |
| June 1986 | Academia Sinica, Taiwan | Visiting Professor |

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|------------------|---|--|
| May 1989 | Erice Int'l School, Italy | Principal Lecturer |
| Dec. 1990 | SILARG7, Mexico City | Principal Lecturer |
| Spring 1992 | Institute for Theor. Physics Univ. Calif. Santa Barbara | Workshop on <i>Phase Transition in the Early Universe</i> (declined) |
| June 1992 | Univ., Buenos Aires, Argentina | Visiting Professor |
| Aug. 1992 | Waseda University, Tokyo Univ., and Yukawa Institute | Senior Fellow, Japan Society for the Promotion of Science |
| July. 1993 | Instituto Superior Tecnico, Lisbon | Visiting Professor |
| Aug. 1993 | CAP-NSERC, Summer Institute in Theoretical Physics, Banff, Canada | Principal Lecturer |
| Nov. 1994 | Department of Physics University of Buenos Aires | Honorary Professor |
| Spring 1995 | Dept. of Physics, | Visiting Professor |
| Spring 99,01 | Hong Kong University of Science and Technology | |
| July 1995 | Tubitak, Istanbul, Turkey | Visiting Professor |
| July 1995 | University of Barcelona, Spain | Visiting Professor |
| Aug. 1995 | Department of Mathematics University of Sydney | Visiting Professor |
| Aug. 1995 | Institute for Mathematical Physics, University of Adelaide | Visiting Professor |
| Sept. 1995 | Erice International School, Italy | Principal Lecturer |
| June 1997 | Dept. of Mathematics Hong Kong University of Science and Technology | Visiting Professor |
| Jan. 1999 | Institute for Theor. Physics Univ. Calif. Santa Barbara | Workshop on <i>Nonequilibrium Quantum Fields</i> |
| Nov. 1999 | Institute for Nuclear Theory University of Washington | Workshop on <i>Quantum Field Nonequilibrium Processes</i> |
| May 2001 | Erice International School, Italy | Principal Lecturer |
| Jan 2004 | University of Queensland University of New South Wales | Visitor |
| 2004-2007 | Institute of Physics, Academia Sinica, Taiwan National Center for Theoretical Sciences, National Tsing Hua University Center for Quantum Information Sciences, National Cheng Kung University | Visiting Professor |
| Mar 2006 | National University of Singapore | Visitor |
| June 2006 | Gdansk University, Krakow University, Poland. Benasque Center, Spain | Visitor |
| July 2007 | Institute of Physics, Institute of Theoretical Physics, Institute of Applied Mathematics and Systems Sciences, Academy of Science, Beijing, China | |
| Aug. 2007 | Lorentz Center, University of Leiden, Holland, | <i>Workshop on Condensed Matter meets Gravity</i> |
| Sept.2007 | Center of Excellence Interdisciplinary Program, Waseda University, Japan | |
| Feb. 2008 | Kavli Institute for Theoretical Physics, U Calif, Santa Barbara, Program on <i>Nonequilibrium Quantum Processes in Particle Physics and Cosmology</i> | |
| Mar-June 2008 | Perimeter Institute for Theoretical Physics, Waterloo, Canada. | Visiting Professor |

- Nov. 2008 Lecturer at the *Inaugural Asher Peres International Physics School on Quantum Information: "Qubits: from photons to black holes"*
Macquarie University, Sydney, Australia
- Jan. 2009 Lecturer in the *International School/Workshop in Gravitation and Cosmology*, Asia-Pacific Center for Theoretical Physics, Korea.
- Mar. 2009 Kavli Institute for Theoretical Physics, Beijing, China. Invited Participant, Program on "*Connecting Fundamental Physics with Observation*".
- Dec. 2010 Vision Speaker, Int'l School on Quantum and Nano Computing Systems and Applications (QANSAS) Dayalbagh Educational Institute. Agra, India.
- Feb. 2011 Visiting Fellow, Macquarie University, Sydney University
- April 2011 Kavli Institute for Theoretical Physics, Beijing. Co-Coordinator Program on "*Quantum Open Systems: Decoherence, Entanglement and Control*"
- May 2011 Visiting Member, Institute for Advanced Studies,
Tsing Hua University, Beijing, China
- Feb-July 2012 Senior Visiting Fellow, Institute for Advanced Study,
Hong Kong University of Science and Technology, Hong Kong, China
- Feb 2013 C N Yang Visiting Professorship, Chinese University of Hong Kong, China
- April 2013 Distinguished Chair Professor, Academia Sinica, Taiwan
- 6/2013-4 Visiting Senior Fellow, Center for Theoretical Physics, Fudan University, China
- 6-7/2015 Distinguished Chair Professor, Physics Department, Fudan University, China

IV. PROFESSIONAL ACTIVITIES

- Member, International Society for General Relativity and Gravitation
- Trustee, Association of Members of the Institute for Advanced Study (1984-1990)
- Council, Chinese Society on *Gravitational Physics and Relativistic Astrophysics* (1981-85)
- Council, Overseas Chinese Physics Association (1990-94, 1998-09) now renamed: International Organization of Chinese Physicists and Astronomers, Division of Gravitation and Cosmology
- International Advisory Committee for
- the Third Marcel Grossmann Meeting, Shanghai, China, 1983
- the Instructional Conference on *Gauge Theory, Gravitation and the Early Universe*, Bangalore, India, 1984
- Local Organizing Committee of
- the 13th International Colloquium on *Group Theoretical Methods in Physics*, College Park, U.S.A., 1984
- the First International Conference on the *Physics of Phase Space*, College Park, U.S.A., 1986.
- International Scientific Organizing Committee for
International Conference on *Gravitation and Cosmology*, Goa, India, 1987.
- International Advisory Committee for
Workshops on *Thermal Field Theories and their Applications*,
First Meeting: Cleveland, U.S.A., Oct., 1988;

Second Meeting: Tsukuba, Japan, July, 1990;
 Third Meeting: Banff, Canada, August, 1993;
 Fourth Meeting: Dalian, China, August 1995.

Technical Program Committee for the Workshop on *Entanglement and Quantum Decoherence* (EQD) organized by the Optical Society of America
 January 28-30, 2007 in Nara, Japan

Discussant at the annual University of Maryland Symposium on *Foundations of Physics*
 International Advisory Committee for the annual *Peyresq Physics Meetings* on
 Gravitation, Cosmology and Quantum Physics France. 1999 – now

International Advisory Board for the DICE Meetings on *Foundational Issues of Gravity, Quantum Mechanics, Statistical Mechanics & Quantum Information*. Piombino, Italy.
 2006, Castello Pasquini (Castiglioncello, Tuscany), 2008, 2010, 2012, 2014, 2016

International Advisory Committee, *Relativistic Quantum Information*
 RQI-N2014 University of Seoul, Seoul, Korea June 2014
 RQI-N2015 Dartmouth College, Hannover, USA July 2015

International Advisory Committee, *Conceptual and Technical Challenges for Quantum Gravity* 2014, University of Rome- Sapienza, September 8 -12, 2014

International Advisory Committee for the International School/Workshop
 on *Gravitation and Cosmology*, Puhang, Korea 2008 sponsored by the
 Asia Pacific Center for Theoretical Physics (APCTP), Korea and the
 National Center for Theoretical Science, Taiwan (NCTS)

Scientific Advisory Committee for International Association of *Relativistic Dynamics*
 (IARD) 2008, 2010, 2012, 2014

Founder and Advisory Committee for the *International Society for Relativistic Quantum Information (ISRQI)* founded in Hualien, Taiwan, June 2010.

Chair, Scientific and Organizing Committees, International Symposium on
Directions in General Relativity, College Park, USA, May, 1993

Co-Chair, International Symposium on *Quantum Classical Correspondence*,
 Drexel University, Philadelphia, U.S.A., Sept., 1994

Panel Member, NSF Panel for the review of proposals for *Frontier Centers of Creativity*
 NSF Panel for the review of proposals for *gravitational physics*
 NASA Panel for the review of proposals for *gravity and relativistic physics*

Editor, *International Journal of Modern Physics A, D*.
Modern Physics Letters A
Quantum Information Processing (current)
International Journal of Quantum Information (current)

V. HONORS AND AWARDS

- *Fellow, American Physical Society
- *Fellow, Joint Quantum Institute, University of Maryland & NIST Gaithersburg
- *Senior Fellow, Japan Society for the Promotion of Science
- * Dyson Visiting Professor (1994) Institute for Advanced Study, Princeton
- * C N Yang Visiting Professor (2013) Chinese University of Hong Kong, Hong Kong

- *Distinguished Chair Professor (2013), Academia Sinica, Taiwan
- *Distinguished Chair Professor (2015), Physics Department, Fudan University, China
- *General Research Board Award (1994, 2007, 2013) Univ. of Maryland Graduate School
- *Teaching Excellence Award (1996) Univ. of Maryland, Dean for Undergraduate Studies
- *Princeton National Fellow (1967) Princeton University Graduate School
- *NSF Exceptional Undergraduate Traineeship (1965-67) Univ. of California, Berkeley

Biographic Listing in: American Man and Women of Science (USA)

- Who's Who in Science and Engineering (USA)
- Who's Who in Frontiers of Science and Technology (USA)
- Who's Who in the World (USA)
- Marquis Who's Who (USA)
- Men of Achievement (UK)
- Who's Who among Asian Americans (USA)
- Huaxia Haiwai Keji Jingying (China)
- Reference Asia (India), etc.

VI. GRANTS AND CONTRACTS

Gravitation and Cosmology, Quantum Field Theory:

Principal Investigator on individual (no sponsoring institution) NSF grant,
 "Research in General Relativity and Relativistic Cosmology"
 Sept. 1979-1980 (at Harvard) \$25,000
 Sept. 1980-1981 (at Maryland) \$27,750

Principal Investigator on NSF Grant PHY-81-07387 to the University of Maryland:
 "Research in General Relativity and Relativistic Cosmology" (3 year grant)
 1981-1983 \$39,043
 1983-1984 \$38,817

Principal Investigator on NSF Grant PHY-84-18199 to the University of Maryland:
 "Gravitation, Quantum Field Theory and Relativistic Cosmology" (3 year grant)
 1984-1985 \$44,300
 1985-1986 \$45,000
 1986-1987 \$50,000

Principal Investigator on NSF Grant PHY-87-17155 to the University of Maryland:
 "Gravitation Quantum Field Theory and Relativistic Cosmology" (4 year grant)
 Nov. 1987 - Nov. 1988 \$63,000
 Dec. 1988 - Nov. 1989 \$69,644
 Dec. 1989 - Nov. 1990 \$85,346
 Dec. 1990 - Nov. 1991 \$63,000

Principal Investigator on NSF Grant PHY-91-19726 to the University of Maryland:
"Gravitation, Quantum Statistical Fields, and Relativistic Cosmology" (3 year grant)

| | |
|-----------------------|-----------|
| Jan. 1992 - Dec. 1992 | \$ 76,184 |
| Jan. 1993 - Dec. 1993 | \$117,679 |
| Jan. 1994 - Dec. 1994 | \$122,400 |

Principal Investigator on NSF Grant PHY94- 21849 to the University of Maryland:
"Gravitation, Quantum Statistical Fields and Relativistic Cosmology" (3 year grant)

| | |
|-------------------|-----------|
| Feb. 95 - Aug. 98 | \$346,677 |
|-------------------|-----------|

Principal Investigator (Joint with Dr. T. Jacobson) on NSF Grant 98-00967 to the
University of Maryland: "Gravitation and Quantum Fields" (3 year grant)

| | |
|---|-----------|
| April 1, 1998 - March 31, 1999 (Year 1) | \$215,336 |
| April 1, 1999 - March 31, 2000 (Year 2) | \$214,695 |
| April 1, 2000 - March 31, 2001 (Year 3) | \$221,173 |
| Creativity renewal for 2 years (Year 4) | \$226,495 |
| April 1, 2002 – March 31, 2003 (Year 5) | \$235,378 |

Principal Investigator (Joint with Dr. T. Jacobson) on NSF Grant PHY03-00710 to
the University of Maryland: "*Towards the Microscopic Structure of Spacetime*"

| | |
|--|-----------|
| (3 year grant) July 1, 03- June 30, 2006 | \$665,000 |
|--|-----------|

Principal Investigator on NSF Grant PHY-0601550 to the University of Maryland:
"*Quantum Field and Gravitational Waves in Black Holes and the Early Universe*"

| | |
|---|----------|
| (2 year grant) July 1, 06 - June 30, 2008 | \$80,000 |
|---|----------|

Principal Investigator on NSF Grant PHY-0801368 to the University of Maryland:
"Black Holes, Gravitational Waves and the Early Universe: Quantum Fluctuations,
Backreaction, Information and Structure

| | |
|---|-----------|
| (3 year grant) July 1, 08 - June 30, 2011 | \$120,000 |
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Perimeter Institute for Theoretical Physics, Waterloo, Canada

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|--|-----------------------------|
| Individual grant, March 1-May 31, 2008 | \$31, 822 (overhead exempt) |
|--|-----------------------------|

Quantum Coherence Phenomena, Quantum Control, AMO and Superconducting Quantum Computer Theory:

PI on **ARDA** Contract MDA90401/C0903, on *Decoherence and Basic Issues in Quantum
Computers* for three years May 1, 2002-April 30, 2005. \$300K

PI on **LPS** grant for support of my graduate student, Nick Cummings for five years,
February 2005 –December 2010 \$129,537/3 yrs + 2 yrs increment

PI on **NIST** Grant: *Quantum Information Processing with Neutral Atoms*

July 1, 2002-June 30, 2005. \$271,430

PI on **NIST** Grant: *Quantum Information Science: From Nanomechanical Resonators to Neutral Atoms Quantum Computing*

July 1, 2005-June 30, 2008. \$217,440

co-PI on **NSF** Grant PHY-0426696 "*ITR: Distributive Quantum Information*"

(PIs: Steven Rolston, Bei-Lok B. Hu, Carl J. Williams, Luis A. Orozco, Wendell T. Hill.)

Sept., 04- Aug., 2009 \$1.65M

(evenly divided by 5 PIs translates to) per PI amount:

Sept 2004 –Aug 2005 \$ 50K

Sept 2005-2006 \$ 40K

Sept 2006-2007 \$100K

Sept 2007-2008 \$100K

Sept 2008-2009 \$100K

Co-PI (with Joe Eberly and Ting Yu) on **DARPA** grant in the QuEST program:

Entanglement Dynamics of Qubit Systems **DARPAHR0011-09-1-0008**

5 year grant (Jan 2009 – Dec. 2010) \$184K

International Cooperative Research Grants:

Principal Investigator (joint with Prof. E. Calzetta) "US -Argentina Cooperative Research on Statistical Field Theory in Gravitation and Cosmology" NSF INT95-09847

Sept. 1995 - Aug. 1997 \$23,092

Principal Investigator (joint with Professors Denjoe O'Connor and Chris Stephens)

(U.S.-Mexico Workshop: "The Renormalization Group at the Turn of the Millennium",

Jan 1999, Taxco, Mexico NSF INT-9813918 Sept. 30, 1998 - Feb. 28, 1999 \$10,150

Travel Grants for the benefit of participants of international conferences:

Principal Investigator NSF Grants for International group travel

1982 \$38,750 Third Marcel Grossmann Meeting (with D.R. Brill)

1983 \$50,000 Tenth General Relativity and Gravitation (with D. R. Brill)

1988 \$25,000 Fifth Marcel Grossmann Meeting (MG5) (with D.R. Brill and H. J. Paik)

Conference Grants for participants:

Principal Investigator (with T. A. Jacobson) for an International Symposium on

"Directions in General Relativity" held at University of Maryland, May 1993 \$5,000

Principal Investigator (with D. H. Feng) for an International Symposium on

"Quantum Classical Correspondence" held at Drexel University, September 1994 \$5,000

VII. TEACHING EXPERIENCE

1. Regular courses taught:

Freshman-Sophomore *Introductory Physics for Physical Sciences, Engineering and Biosciences Majors* (Physics 122, 262, 263, 270)
Introductory Physics for Physics Majors (Physics 170, 272/272H)

Junior-Senior Courses for Physics Majors:

Modern Physics (Physics 421-422)
Modern Physics for Engineering Majors (Physics 420)
Thermal Physics (404)

Undergraduate Physics Research: Physics 389

Independent Study Seminar: Physics 398

Graduate Physics *Core Course: Statistical Mechanics* (Physics 602)

Topical Courses: *General Relativity* (Physics 675/875)

Topical Courses: *Advanced Gravitation Theory* (Phys. 776)

Special Topics Courses (Physics 879: see below)

Interdisciplinary Courses (Physics 889: see below)

Seminar: *Gravitation Theory*: Physics 779A

Seminar: *Quantum Coherence and Information*: Physics 779B

Special Problems in Advanced Physics: Physics 798

Master's Thesis Research: Physics 799

Ph.D. Dissertation Research: Physics 899

2. Innovations: **New courses** designed and taught:

"*Quantum Processes in the Early Universe*" Physics 889 (Fall 1983)

"*Quantum Field Theory in Curved Spacetime*" Physics 879 (S'84, S'86, S'92)

"*Geometric Methods in Physics*" Physics 798B (S'88)

"*Particles and the Universe*" Physics 889 (S'88):

taught jointly with Professors Pati and Eichler

"*Statistical Field Theory: Problems in Gravitation Cosmology and Nuclear- Particle Physics*," Physics 889 (S'91, S'97)

"*Advanced Gravitation Theory*" Physics 776 Designed this new course and taught (S'93, S'96, S'02 S'04)

"*Statistical Field Theory: Quantum and Atom Optics*", Physics 889 (S'98)

"*Black Holes and the Early Universe*", Physics 499G (S'99), Physics 140 (S'01) @ Hong Kong University of Science and Technology (HKUST). Physics 4054 (S2012)

"*Introduction to Astrophysics: General Relativity, Black Holes and New Cosmology*"

"*Nonequilibrium Quantum Field Theory: Dynamics of Bose Einstein Condensate and Advanced Topics*", Physics 889 (S'03)

"*Gravitational Wave Physics and New Cosmology*" Physics 776 (S '04)

"*AMO Research*" Physics 726. Individual student supervision on current topics (since 2005 as the education component of NSF-ITR grant on quantum information)

"Nonequilibrium Quantum Field Theory: Physics 889 (F'10)

3. Supervised **independent research** or reading course to undergraduates

1983-1986 Chairman of Physics Honors Committee
Spring 1983 Dallas Kennedy, David Wasson, Selman Herschfield
1993-1994 Steve Sabian
1995-1996 Veronika Hubeny
1999-2000 Nick Cummings

4. *Master of Science* Students

James T. Wheeler, May 1981
Liam M. Healy, December 1981
Joseph Shanks, May 1982
Laura Mersini, May 1997

VIII. *Doctor of Philosophy* Students Supervised and *Postdoctoral Research Associates*

A. *Doctor of Philosophy* Students

1. Tsung-Chen Shen, Oct. 1985
"Quantum Effects on Non-Maximally Symmetric Spaces"
2. Dennis Joseph O'Connor, Oct. 1985
"Quantum Field Theory in Curved Spacetime: Phase Transition and Finite Size Effect"
3. Christopher Rhodes Stephens (joint with Prof. Charles W. Misner), Oct. 1986
"On Some Aspects of the Relationship between Quantum Physics, Gravity and Thermodynamics"
4. Salman Habib, Sept. 1988
"Quantum Fields in Curved Spacetime: Kinetic Theory"
5. Yuhong Zhang, Dec. 1990
"Stochastic Properties of Interacting Quantum Fields"
6. Aris Stylianopoulos, Dec. 1990
"Finite Temperature Quantum Field Theory in Curved Spacetime"
7. Roberto Camporesi, May 1991
"Geometrical Representation of Propagators and Quantum Effects in Spacetimes with Symmetry"
8. Sukanya Sinha, May 1991 "Semiclassical Limit of Quantum Cosmology"

9. Andrew Matacz (joint with Prof. Paul Davies, Univ. of Adelaide), May 1994
"Quantum Statistical Processes in Cosmology and Gravity"
10. Don Koks (joint with Prof. Paul Davies, Univ. of Adelaide), May 1996
Decoherence, Entropy and Thermal Radiance Using Influence Functionals
11. Alpan Raval, Dec. 1996
"Stochastic Properties of Particle Detector and Quantum Field Interactions"
12. Stephen A. Ramsey, Dec. 1997
"Nonequilibrium Dynamics of Quantum Fields in Inflationary Cosmology"
13. Kazutomu Shiokawa, May 1998
"Coherence in Quantum Chaos, Stochastic Spacetimes and Collective Phenomena"
14. Nicholas G. Phillips, May 1999
"Fluctuations of the Quantum Stress Tensor in Curved Spacetimes via Generalized Zeta Functions and Point Separation"
15. Philip Johnson, Dec. 1999
"Nonequilibrium Dynamics of Particle Field Interaction"
16. Gregory Stephens, Aug. 2000
"Nonequilibrium Dynamics of Defect Formation in the Early Universe"
17. Sanjiv Shresta, Oct. 2003
"Coherent Quantum Dynamics of Atom- Quantum Field Interaction"
18. Ana Maria Rey, Dec. 2004 (formally under Prof. Theodore Kirkpatrick, joint with Drs. Charles Clark & Carl Williams, NIST)
"Ultra-cold Bosonic Atoms in an Optical Lattices"
19. Guido Pupillo, Aug. 2005 (joint, mainly under Dr. Carl Williams, NIST)
"Confined Ultracold Bosons in One Dimensional Optical Lattices"
20. Andrew Skinner Aug. 2006 (joint with Dr. Bruce Kane, LPS)
"Hydrogenic Spin Quantum Computing in Silicon and Damping and Diffusion in a Chain-Boson Model"
21. Ardeshir Eftekharzadeh May, 2007
"Topics in Gravitational Radiation Reaction and Black Hole Fluctuations"
22. Chad R. Galley, December 2007

“Stochastic and Effective Field Theory Approach to Gravitational Radiation Reaction”

23. Ryan Behunin September 2010 “Nonequilibrium Quantum Fluctuation Forces”

24. Anzi Hu, Nov. 2010 (Joint with Drs. Carl Williams and Charles Clark, NIST)
“Quantum many-body phenomena in ultra-cold atoms in optical lattices”

25. Nick Cummings, April 2011
“Quantum Entanglement Dynamics in Atom-Field Interactions”

26. Chris Fleming, April 2011
“Open Quantum Systems: Properties of Stochastic Equations and Their Solutions”

27. Stephen Kwan-yuet Ho 2012 (Joint with, mainly under Prof. Ted Kirkpatrick, IPST)
“Studies on 2D Bose Gas Vortices and Dzyaloshinsky-Moriya Magnets”

28. Yigit Subasi October 2013
“Nonequilibrium Quantum Systems: Fluctuations and Interactions”

29. Kanupriya Sinha September 2015
“Studies of a Microscopic Model of Quantum Optomechanics”

30. Rong Zhou (indefinite)
“Quantum Entanglement Dynamics: Boundary and Nontrivial Topology Effects”

Ph.D. external examiner:

James Anglin, University of Montreal, Canada 1994

Lorenzo Sindoni, SISSA, ICTP, Trieste, Italy. Sept, 2009

Tommaso Demarie, Macquarie University, Sydney, Australia. Dec. 2013

B. *Postdoctoral Research Associates* and their current position, if available, needs updating (Supported under own grant, joint GRT or group CTP grant at UMCP)

Rafael Sorkin (Professor, Perimeter Institute, Waterloo, Canada)

Ping Yip,

A. Sen,

Esteban Calzetta (Professor, University of Buenos Aires, Argentina)

Henry Kandrup (deceased),

Arlen Anderson, (left physics)

Kristen Schleich (University of British Columbia, Vancouver, Canada)

Iannis Bakas (University of Crete, Greece)

Atsushi Higuchi, (University of York, UK)

Juan Pablo Paz, (Professor, University of Buenos Aires, Argentina)
Jonathan Simon, (Professor, University of Maryland, USA)
Joseph Romano, (University of Texas, Brownsville, USA)
Jorma Louko, (Nottingham University, UK)
Charis Anastopoulos, (University of Patras, Greece)
Stefano Liberati, (ICTP, Trieste, Italy)
Albert Roura (University of Ulm, Germany)
Kazutomu Shiokawa (National Center of Theoretical Sciences, Taiwan, now in Japan)
Chad Galley (Caltech, Pasadena)
Chun-Hsien Chou (visiting, now at National Cheng Kung University, Tainan, Taiwan)
Shih-Yun Lin (visiting, now at National Changhua University of Education, Taiwan)
Jen-Tsung Hsiang (visiting, now CTP Fellow, Fudan University, China)

IX. INVITED TALKS AT INTERNATIONAL MEETINGS

Speaker or Chairman at International Meetings or Visits (*indicates invited talks or lectures, - indicates invited participants, + indicates chairman of sessions,)

- 1971 Sixth International Conference on General Relativity and Gravitation,
July, Copenhagen, Denmark
- 1972 Summer Institute on "The Physics of Black Holes" July, Les Houches, France
Sixth Texas Symposium on Relativistic Astrophysics, Dec., New York, U.S.A.
- 1974 Seventh Texas Symposium on Relativistic Astrophysics, Dec., Dallas, U.S.A.
- 1976 Eighth Texas Symposium on Relativistic Astrophysics, Dec., Boston, U.S.A.
- 1977 Eighth International Conference on General Relativity and Gravitation, Aug.,
Waterloo, Canada
- 1978 Summer Institute on "Quantum Gravity and Supergravity", July, Cargese, France
- 1979 +*Second Marcel Grossman Meeting in commemoration of **Albert Einstein's Centenary**, July, Trieste, Italy
- 1980 +***First Theoretical Particle Physics Conference**, Jan., Gaungzhou, China
Ninth International Conference on General Relativity and Gravitation,
July, Jena, D.D.R.
- 1981 ***Workshop on the Interaction of Particle Physics and Astrophysics**, May,
Santa Barbara, U.S.A.
- 1982 ***Nuffield Workshop on the Very Early Universe**, July, Cambridge, U.K.
*Imperial College, July, London, U.K.

- ***Third Marcel Grossmann Meeting** on Recent Developments of General Relativity, August, Shanghai, China
 *Shanghai Teacher's University, August, Shanghai, China
- 1983 ***Second New Orleans Conference on Quantum Theory and Gravitation**
 May, New Orleans, U.S.A.
 Tenth International Conference on General Relativity and Gravitation, July, Padova, Italy
 ***Workshop on Induced Gravity** Oct., Erice, Italy
- 1984 ***Inner Space/Outer Space Conference on the Intersection of Particle Physics and Cosmology**, May, Fermilab, U.S.A.
 *International Workshop on **Gauge Theory, Gravitation and the Early Universe**, Nov., Ahmedabad, India
 *Raman Institute of Physics, Nov., Bangalore, India
- 1985 +*Conference on **Classical and Quantum Gravity** April, Syracuse, U.S.A.
 ***Fourth Marcel Grossman Meeting** on the Recent Development of General Relativity, June, Rome, Italy
 *International Symposium on "**Particles and the Universe**"
 June, Thessaloniki, Greece
 *Institute of Theoretical Physics, Academia Sinica, July, Beijing, China
 *Research Institute of Fundamental Physics, Aug., Kyoto, Japan
- 1986 +Washington American Physical Society Meeting, Session on Gravitation Physics, April, Washington, D.C, U.S.A.
 +First International Conference on the **Physics of Phase Space**, May, College Park, U.S.A.
 +Workshop on **Approaches to Quantum Gravity**, June, Santa Barbara, U.S.A.
 +**NATO Workshop on Superfields**, July, Vancouver, Canada
 *New York State **American Physical Society Meeting** on Cosmology and Elementary Particles, Oct., Syracuse, U.S.A.
- 1987 ***Quantum Cosmology Workshop**, May, Fermilab, U.S.A.
 ***CAP-NSERC Summer Institute Theoretical Physics**, July, Edmonton, Canada
 ***International Conference on Gravitation and Cosmology**, Dec., Goa, India
- 1988 ***Third Asia-Pacific Physics Conference** June, Hong Kong
 *Academia Sinica, June, Taipei, Taiwan
 *+**Fifth Marcel Grossmann Meeting** on the Recent Development of General Relativity, August, Perth, Australia
 *First International Workshop on **Thermal Field Theories** and Applications, Oct., Cleveland, U.S.A.
- 1989 *Eleventh International School on Cosmology and Gravitation,

- "Quantum Mechanics in Curved Spacetime,"** May, Erice, Italy
 *Workshop on Quantum Field Theory in Curved Spacetime,
 at the Twelfth International Conference on **General Relativity and
 Gravitation,** July, Boulder, Colorado, U.S.A.
- 1990 *CIAR-CITA Workshop on **Quantum Cosmology** and Workshop on **Inflation
 and Exotic Cosmic Structure Formation,** May, Vancouver, Canada
 *Second International Workshop on the Theory and Application of **Thermal
 Fields,** July, Tsukuba, Japan
 *University of Tokyo & Waseda University Joint Seminar, July, Tokyo, Japan
 *Seventh **Latin American International Symposium on General Relativity,**
 Dec., Mexico City, Mexico
- 1991 *Workshop on the **Physical Origin of Time-Asymmetry,** Sept., Heulva, Spain
 *Universidad Autonoma de Barcelona, Spain, August
- 1992 *International Conference on the **Origin of Structure in the Universe,**
 April, Chateau de Pont d'Oyle, Belgium
 ***Journees Relativiste,** May, Amsterdam, Holland
 *Third International Workshop on **Quantum Nonintegrability,**
 May, Drexel Univ., Philadelphia, U.S.A.
 *Institute for Astrophysics and Space Sciences, June, Buenos Aires, Argentina
 *Fifth Asia-Pacific Physics Conference, August, Genting, Malaysia
 *International Conference on **Quantum Physics and the Universe,**
 August, Waseda University, Tokyo, Japan
 *University of Tokyo and Yukawa Institute, August, Kyoto, Japan
- 1993 +International Symposium on **Directions in General Relativity,**
 May, College Park, U.S.A.
 *Instituto Superior Tecnico, July, Lisbon, Portugal
 *Third International Workshop on **Thermal Field Theory** and Applications,
 August, Banff, Canada
 *International Workshop on **Fluctuations and Order,** Sept., Los Alamos, U.S.A.
 *Institute for Astrophysics and Space Sciences, Nov., Buenos Aires, Argentina
 ***Lanczos Centenary International Conference,** Symposium on Decoherence
 and Foundation of Quantum Mechanics, Dec., Raleigh, N.C., U.S.A.
- 1994 ***Newton Institute, Program for Geometry and Gravity,** April-May,
 Cambridge, U.K.
 ***Journee Cosmologie,** June, Observatoire de Paris, France
 ***Quantum Concepts of Space and Time,** July, University of Durham, U. K.
 ***Heat Kernel Techniques and Quantum Gravity,**
 August, Univ. of Winepeg, Canada
 *International Symposium on **Quantum Classical Correspondence,**
 Sept., Drexel University, Philadelphia, U.S.A.

- *Institute for Astrophysics and Space Studies,
Nov., University of Buenos Aires, Argentina
- 1995 *19th **International Conference on Statistical Physics**, July, Xiamen, China.
*4th International Workshop on Thermal Field Theory and its Applications,
August, Dalian, China.
***International School on Astro-fundamental Physics**, Sept. Erice, Italy.
- 1996 ***Second International Sakharov Conference**, Lebedev Physical Institute,
Moscow, Russia, May, 1996
*International Workshop on **Non-equilibrium Phase Transitions**, Santa Fe,
New Mexico July, 1996
*University of Alberta, Edmonton, August 1996
*Imperial College, London, Nov. 1996
- 1997 *International Symposium on **Gravitation and Cosmology**, Soochow University,
Taipei, Taiwan, June 1997
*International Symposium on **Macroscopic Quantum Coherence**, Northeastern
University, Boston, July 1997
***Cosmology/Topology Workshop**, Case Western Reserve University, Cleveland,
October 1997
*Imperial College, London, U.K., November 1997
*University of Cardiff, Wales, U.K., November 1997
*Korean Institute for Advanced Study, Seoul, December 1997
*Institute for Theoretical Sciences, Tsing Hua University, Hsing chu, Taiwan,
December, 1997
- 1998 *Second International Symposium on **Quantum Gravity** in the Southern Cone",
Centro Atomico, Bariloche, Argentina, January 1998
*Third Peyresq Meeting on **Quantum Cosmology**, Peyresq, France, June 1998
***Nonequilibrium Quantum Fields and Relativistic Heavy Ion Physics**,
Brookhaven National Laboratory, October 1998
- 1999 *Workshop on **Nonequilibrium Quantum Fields**, Institute for Theoretical
Physics, UC Santa Barbara, January 1999
*The **Renormalization Group** 2000, Taxco, Mexico, January 1999
***Black Holes II: Theory and Mathematical Aspects**, Val Morin, Quebec, Canada,
June, 1999
*Fourth Peyresq Meeting on **Quantum and Stochastic Gravity**, String
Cosmology and Inflation. Peyresq, France, June 1999
*Workshop on **Quantum Field Theory of Nonequilibrium Processes**, Institute
for Nuclear Theory, University of Washington, Seattle. Nov. 1999
- 2000 *Fifth Peyresq Meeting on **Stochastic Gravity and Quantum Cosmology**,
Peyresq, France, June 2000

- *International Conference in Honor of E. Fradkin, Moscow, June 2000 (declined)
 - *International Conference on **Mechanisms of Decoherence** , Utrecht, Netherland, June 2000 (declined)
 - *Minisymposium in Honor of Leonard Parker, Oakland University, Oct. 2000
 - *Second International Workshop on **Quantum Aspects of Beam Physics**, Capri, Italy, Oct. 2000
- 2001
- * Lectures on **Quantum and Gravity Physics** at the Erice International School, Italy; May 2001.
 - ***Black Holes III: Theory and Mathematical Aspects**, Banff, Canada, May, 2001
 - *Sixth Peyresq Meeting on **Quantum and Stochastic Gravity, String and Brane Cosmology**. Peyresq, France, June 2001
 - * Workshop on **Mechanisms for Decoherence**-Theory and Applications to Nanotechnology and Quantum Information Science held at IC2, University of Texas, Austin, October 2001
- 2002
- + Session on New Approaches to Quantum Gravity in the Workshop on **New Directions in the Foundations of Physics** May 3-5, 2002. AIP, College Park
 - * IXth International Conference on **Quantum Optics** Raubichi, BELARUS, May 14-17, 2002. ICQO'2002 (declined)
 - * Third International **Sakharov Conference** on Physics, Lebedev Institute Moscow June 24-28. (declined)
 - *Seventh Peyresq Meeting on Quantum and Stochastic Gravity, **Brane and String Cosmology** Peyresq, France, June 23-28, 2002
 - *Santa Fe **Cosmology Summer Workshop**, July 8-27, 2002
 - *Dynamics Days Asia-Pacific: Second International Conference on **Nonlinear Science** (DDAP2) Hangzhou, China. August 8-12, 2002. (declined)
 - *Workshop on **Quantum Control** at MIT, October 14-18, 2002
- 2003
- *International Workshop on **Quantum Aspects of Beam Physics**. Hiroshima, January 2003 (declined)
 - *APS Topical Group: **Analog Models of Gravity**, Philadelphia, April 2003 (paper presented by co-author E. Calzetta)
 - +2nd annual New Directions in the **Foundations of Physics**. AIP, U Maryland, College Park. May 2-4, 2003
 - *First International Conference on **Noise and Fluctuations in Photonics and Quantum Optics**", Santa Fe, USA, 1-4 June (Program comm.& Invited speaker)
 - *Workshop on "The **Early Universe, Inflation and CMB Fluctuations**" Peyresq, France June 22-26, 2003
 - *Santa Fe **Cosmology Summer Workshop**, July 7-25, 2003 (declined)
 - *Sixth International Workshop on **Quantum Field Theory** under the Influence of External Conditions (QFEXT03), Univ.of Oklahoma, Norman, Sept. 15-19, 2003
- 2004
- +3rd annual **New Directions in the Foundations of Physics** conference, AIP, Univ. Maryland, College Park. April 30 - May 2, 2004

- *Second International Conference on **Noise and Fluctuations**, Canary Islands, May 26-28. Program committee member and Invited speaker in **Photonics and Quantum Optics** (declined)
 - *7th Capra Meeting on **Gravitational Radiation Reaction**, Brownsville, Texas May 29-31, 2004 (declined)
 - *Biennial conference of the International Association for **Relativistic Dynamics**, Saas Fee, Switzerland 12-19 June 2004
 - *Workshop on "**Macro and Micro Structures of Spacetime**" Peyresq, France June 22-26
 - *Second International Workshop (DICE 2004) on **Decoherence, Gravity, Cosmology and Extensions of Quantum Theory**, Tuscany, Italy. Sept. 1-4
 - International Workshop on **RHIC physics**. Brookhaven National Laboratory. Dec. 16-17, 2004
- 2005
- *International Conference on **Theoretical Physics** dedicated to the **70th Anniversary of the Tamm Theory** Department, Lebedev Institute, Moscow, April 11-16 (declined)
 - ***Quantum Physics of Nature** (QUPON), Vienna, Austria, May 22-26
 - *10th Peyresq Workshop on "**Macro and Micro Structures of Spacetime II**", Peyresq, France, June 18-24
 - *Santa Fe **Cosmology Summer Workshop**, Santa Fe, New Mexico. July 5-23 (declined)
 - Quantum Control** Summer School, Caltech, Pasadena, Aug. 8-14 (declined)
 - ***Quark-Gluon-Plasma** Thermalization, Vienna, Austria, August 10-12, 2005 (declined)
 - *14th International Conference on **Fluid Dynamics in Complex Systems**. Kyoto University, Japan, Aug. 22-26 (declined)
 - 6th International Conference **Renormalization Group 2005** (RG2005) at the University of Helsinki, August 30 - September 3, 2005 (declined)
 - *Asia-Pacific Conference on **Gravitation and Cosmology** – in celebration of the 90th anniversary of the publication of the Theory of General Relativity, National Central University, Taiwan. Nov 23-26.
- 2006
- *Winter School on **Quantum Information Science**, National Cheng Kung University, Sun Moon Lake, Taiwan, Jan 5-7
 - ***National University of Singapore**, Physics Department and Center for **Quantum Information Science**, March 30-April 3
 - *National Center for Theoretical Science, Taiwan April 6-8; Institute of Physics, Academia Sinica, Taiwan May 13-23
 - * International Conference on **Nonlinear Science**, Hong Kong May 24-26
 - * **Quantum Entanglement & Geometry**, Toruń, Poland June 4-7, 2006
 - * Jagiellonian University, Krakow, Poland June 12-13
 - *11th Peyresq Workshop on "**Macro and Micro Structures of Spacetime IV**", Peyresq, France, June 17-23

- * Workshop on **Quantum - Classical Transition and Quantum Information**, June 18-30 Benasque
 - * Santa Fe **Cosmology Summer Workshop**, Santa Fe, New Mexico. July 3-21
 - * Workshop on NonGaussianity in **Cosmology**, ICTP Trieste, Italy July 24- 28 (both declined)
 - * DICE2006 International Workshop: **Quantum Mechanics between Decoherence and Determinism**: new aspects from particle physics to cosmology Castello di Piombino (Tuscany) Italy, September 11-15, 2006
- 2007
- *Third Workshop on **Quantum Information Science and Technology**, National Center for Theoretical Sciences, Tainan, Taiwan, Jan 5- 11
 - *Tainan Workshop on **Gravitation and Cosmology**, Jan 13-15, Tainan, Taiwan
 - *National Center for Theoretical Science, National Tsing Hua University, National Cheng Kung University; Institute of Physics, Academia Sinica, Taiwan
 - *Workshop: “From **Quantum to Emergent Gravity**: Theory and Phenomenology” Trieste, Italy. June 11-15
 - *12th Peyresq Workshop on “**Macro and Micro Structures of Spacetime III**”, Peyresq, France, June 16-22
 - *International Conference on **Quantum Gravity “LOOPS '07** Morelia, Mexico June 25 - 30
 - *Summer School on “**Nonequilibrium Dynamics and Quantum Coherence Phenomena**” National Center for Theoretical Sciences, Taiwan, July 4-6
 - *The **Chinese Academy of Sciences**, Beijing, China: Institute of Physics, Institute of Theoretical Physics, and Academy of Mathematics and Systems Sciences, July 23-27
 - *Workshop on “**Condensed Matter meets Gravity**”, Lorentz Center, University of Leiden, Holland, August 27-31
 - *Symposium on **New Directions in Interdisciplinary Research** in the 21 Century, Japanese Government sponsored **Center of Excellence program**, Waseda University, Tokyo. Sept 13-14. Seminar at **Research Center for Early Universe**, Tokyo University, Sept 12
- 2008
- *Taitung Winter School of **Gravitation and Cosmology** Jan 7-10, Taiwan.
 - * KITP program on **Nonequilibrium Phenomena** in Cosmology and Particle Physics and invited speaker at the Conference. Feb 4-29
 - * **Foundations of Physics** Symposium, U. Maryland, College Park. April 24-27
 - * Perimeter Institute, Waterloo, **Quantum Gravity** April 3, **Cosmology** May 26; CITA, University of Toronto, April 18; Canadian Atlantic **General Relativity** Meeting, University of New Brunswick, Canada, May 10-11
 - * 13th Peyresq Workshop on “**Macro and Micro Structures of Spacetime**”, Peyresq, France, June 21-27.
 - * International Association of **Relativistic Dynamics (IARD)** 2008, Thessaloniki, Greece, June 22-26.
 - * Chinese Society of **Gravitation & Relativistic Astrophysics**, Lanzhou July 19-23

- * Workshop on **Cosmology and Condensed Matter** as part of ULT2008: Frontiers of Low Temperature Physics International conference, at Royal Holloway, University of London, August 14-17. (politely declined)
 - * Workshop on “**Emergent Gravity**”, MIT, August 25-29
 - * Benasque Workshop on **Quantum Coherence and Decoherence**, Spanish Pyrenees, Sep 13-21
 - * DICE2008 – **From Quantum Mechanics through Complexity to Gravity** September 22-26 at the Castello Pasquini (Castiglioncello), Tuscany, Italy.
 - * Xiangshan Meeting on **Gravity Experiments in Space**, Beijing, . Oct 26-28
 - * Invited Lecturer in the Inaugural Asher Peres **International Physics School on Quantum Information: "Qubits: from photons to black holes"** Macquarie University, Sydney, Australia, Nov. 17-22
- 2009
- * Invited Lecturer in the International School/Workshop in **Gravitation and Cosmology**, Asia-Pacific Center for Theoretical Physics, Korea. Jan. 16-20
 - * KITP Beijing China “**Connecting Fundamental Physics with Observation**.” Program: Feb 16 - Apr 30. Attendance Mar 8-22.
 - * Invited talk at the 4th **International Sakharov Conference** on Physics, Moscow, Russia, May 18—23 (politely declined)
 - * Emergent Gravity Conference, University of British Columbia, Vancouver
 - * Meeting on Mathematical Relativity, **Instituto Superior Tecnico, Lisbon**. June 15-19
 - * 14th Peyresq Workshop on “**Macro and Micro Structures of Spacetime**”, Peyresq, France, June 20-26.
 - * Loop Quantum Gravity 2009. August 2-8, Beijing, China (politely declined)
 - * OCPA6, **Lanzhou, China**. Organizer of sessions on gravitation and cosmology.
 - * 3rd International workshop on **Relativistic Quantum Information**, Dec 10-11. Visit to **Center for Quantum Information, University of Queensland**, Brisbane, Australia Dec 12-15
 - * **Center for Quantum Information and Technology, Macquarie University**, Sydney, Australia, Dec 16-19
- 2010
- * **Quantum Gravity and the Foundations of Physics**, Rosario, Argentina. March 17-19th
 - * International workshop on **Relativistic Quantum Information RQI-N** (northern hemisphere) May 28-30, Hualien, Taiwan – Chief architect in the establishment of the **International Society of Relativistic Quantum Information (ISRQI)**
 - * International Association of **Relativistic Dynamics (IARD)** 2010 May 30- June 2, Hualien, Taiwan
 - * **Zhejiang University**, Hangzhou, Mathematics Department and **Fudan University**, Shanghai, Physics Department, China June 10-18
 - * 15th Peyresq Workshop on “**Macro and Micro Structures of Spacetime**”, Peyresq, France, June 19-25.
 - * The Fifth International Workshop DICE2010 on **SPACE-TIME-MATTER - CURRENT ISSUES IN QUANTUM MECHANICS AND BEYOND**

- Castello Pasquini (Castiglioncello, Tuscany), September 13-17
 ***Nanjing University**, Physics and Astronomy, Nanjing, and **University of Science and Technology**, Physics Department, Hefei, China October 25-29
 *4th Int'l workshop on **Relativistic Quantum Information**, Nov. 22-24. Center for Quantum Information, **University of Queensland**, Australia (declined)
 *International School on Quantum and Nano Computing Systems and Applications (**QANSAS**) Dayalbagh Educational Institute. Agra, India. Dec. 2-5.
- 2011 *Visiting Research Professor, National Center for Theoretical Sciences (south), National **Cheng Kung University**, Tainan, Taiwan, January, May
 *5th Winter School on Quantum Information Science, Kending, Taiwan Jan 15-18
 *Senior Visiting Fellow, **Macquarie University, Sydney**;
 ***University of Queensland**, Brisbane, Australia, Feb 9-Mar 16
 *Coordinator, Program on **Decoherence, Entanglement and Control, KITPC**, Institute of Theoretical Physics, **Chinese Academy of Sciences, Beijing**, China
 *Institute for Advanced Study, **Tsing Hua University**, Beijing, China, April-May
 * The 5th Asia-Pacific Workshop on **Quantum Information Science**, Institute of Advanced Studies, **Nanyang Technological University, Singapore**. May 25-28
 *16th Peyresq Workshop on “**Macro and Micro Structures of Spacetime**”, Peyresq, France, June 18-24.
 ***European Science Foundation (ESF)** International Exploratory Workshop on “**Gravity as Thermodynamics: Towards the microscopic origin of geometry**” SISSA/ISAS, Trieste, Italy. Sept 5-8
 *OCPA7 meeting, Sun Yat Sen University, Kaohsiung, Taiwan August 1-5
 *International Conference on **Self-Organization and Emergence: Emergent Quantum Mechanics (EmerQuM11)** Heinz von Foerster Centenary. November 10th–13th Vienna, Austria.
- 2012 *Guest Senior Professor, Public Lectures, **National Changhua University of Education, Taiwan**, Dec-Jan
 * Senior Visiting Fellow, **Institute for Advanced Study, Hong Kong University of Science and Technology**, Hong Kong, China Jan-July.
 *Visiting Professor, **Peking University**, Beijing, China, March 9-12
 * Visiting Professor, **Lanzhou University**, Lanzhou, China, May 3-6
 * Plenary Speaker, *XXXV Encontro Nacional de Fisica da Matéria Condensada* the **Brazilian Physical Society**, Aguas de Lindoia, Sao Paulo, Brazil, May 14-18
 ***kTLog2: Quantum Fluctuations and Information**” Cuenca, Spain, May 24-26
 *Vitaly **Ginzburg Conference** on Physics, Lebedev Physical Institute, Moscow, May 28-June 2
 *International Association of **Relativistic Dynamics (IARD)** 2012 Conference The **Galileo Galilei Institute for Theoretical Physics (GGI)** Florence, Italy. May 29 - June 1. (Declined)
 * 3th International Workshop on **Quantum Decoherence, Entanglement and Control**, Shanghai University, Shanghai, China June 13-15

- *17th Peyresq Workshop on “**Macro and Micro Structures of Spacetime**”,
Peyresq, France, June 16-22
 - *Visiting Professor, **Fudan University**, Shanghai, China, June 11- 15 -27.
 - *The sixth International Workshop **DICE2012** Castiglioncello, Tuscany, Italy
September 17 -21
 - *Colloquium on the **Philosophy of Science**: Recent Progress and Remaining
Problems in Quantum Gravity, Boston University, Oct. 15, 2012
- 2013
- *Workshop on “***Probing the Microscopic Origin of Gravity: Interaction between Theoretical and Experimental Efforts***” National Tsing Hua Univ. Taiwan Jan 27
 - *Invited Speaker, Div. Astronomy, Gravitation and Cosmology, Annual Meeting,
Taiwan Physical Society, National Dong Hua University, Hualien, Taiwan Jan 30
 - ***C N Yang Visiting Professorship**, Chinese University of Hong Kong. February
 - *Visiting Research Professor, National University of Singapore, March
 - *Senior Research Fellow, Institute of Physics, Academia Sinica, Taiwan, April
 - *Visiting Professor, Dalian University of Technology, Dalian, China April
 - *Visiting Professor, Fudan University, Shanghai, China, April –June
 - * Pacific Institute of Theoretical Physics, “**Intrinsic Decoherence in Nature**”,
Galiano island, Vancouver, Canada 22-25 May 2013
 - *18th Peyresq Physics on “**Macro and Micro Structures of Spacetime**”,
Peyresq, France, June 15-21
 - *International Workshop on **Relativistic Quantum Information and Metrology**,
University of Nottingham, UK, June 24-26
 - ***Emergence in Curved Spacetime**, BIRS workshop, Banff, Canada, Sept 22-27
 - * Second International Conference on **Emergent Quantum Mechanics**,
Austrian Academy of Sciences, Vienna, Austria. Oct. 3-6.
 - *Visiting Professor, **Raman Research Institute**, Bangalore, India, Nov 25-30
- 2014
- *International Conference on **Fundamental Problems in Quantum Physics**.
ESF-COST program Weizmann Institute of Science, Rehovot, Israel, March 23-27.
 - * 2nd International Conference on **Phononics and Thermal Energy Science**,
Tongji University, Shanghai May 26-31
 - *19th Peyresq Workshop on “**Macro and Micro Structures of Spacetime**”,
Peyresq, France, June 14-20
 - * Institute of Advanced Study, Nanyang Technical University, Singapore, June
 - * International Conference on **Relativistic Quantum Information RQI-N2014**
Seoul, Korea June 30-July 2, 2014
 - *Visiting Professor, **Raman Research Institute**, Bangalore, India, July
 - *Conceptual and Technical Challenges for **Quantum Gravity** 2014, Sapienza
University of Rome, September 8 -12, 2014 (Advisory committee member)
 - *The Seventh International Workshop **DICE2014** Castiglioncello, Tuscany, Italy
September 15-19
 - ***Quantum Optics** VII, October 27-31,2014 / Mar del Plata – Argentina
(declined)

- 2015 ***Nonequilibrium Transport** Research Group, Xiamen University China, May
 *20th Peyresq Workshop on “**Macro and Micro Structures of Spacetime**”,
 Peyresq, France, June 13-19
 * **Quantum thermodynamics** at Peking University; **Quantum many-body
 physics** at IAS Tsing Hua University, **Quantum information & quantum
 optomechanics** at The Institute of Theoretical Physics, Chinese Academy of
 Natural Sciences and Beijing Computational Sciences Center, May-June
 *International Workshop on **Relativistic Quantum Information (RQI-N)**,
 Dartmouth College, New Hampshire, USA June 5-8 (unable to attend)
 * "**Thermodynamics and Nonlinear Dynamics in the Information age**"
 Telluride Science Research Center during July 13-17, Telluride, Colorado, USA
 (declined)
 *International workshop “Probing the Mystery: **Theory & Experiment in
 Quantum Gravity**” Galiano island, Vancouver, Canada August 17-20
 ***Emergent Quantum Mechanics** *EmQM15*, Vienna, Austria October 23-25
 * The 3rd International Workshop on **Frontiers in Quantum Optics and
 Quantum Information**” Beijing Computational Sciences Center Nov 26-28
 (unable to attend)
 *International Conference on Physics of the **Early Universe**, National Cheng-
 Kung University, Tainan, Taiwan Dec 25-27.
- 2016 *Invited lectures, [YITP Workshop on Quantum Information Physics](#), Yukawa
 Institute for Theoretical Physics, Kyoto University Jan 5th-8th, 2016 (*Declined*)
 Shapes of Gravity” International meeting on **Quantum Gravity at the Radboud
 University in Nijmegen, Netherlands March 30- April 1
- *21st Peyresq Workshop on “**Macro and Micro Structures of Spacetime**”,
 Peyresq, France, June 12-17
- *"**Information Engines at the Frontiers of Nanoscale Thermodynamics**"
 workshop at the Telluride Science Research Center, June 23 -- July 01 Colorado,
 USA (*unable to attend*)
 *Conference **Relativistic Quantum Information** RQI-N2016, Institute for
 Quantum Computing in Waterloo June 21-24 (*unable to attend*)
 *International Conference in **Memory of Jacob Bekenstein**, July 3-8, the Emmy
 Noether Centre of Theoretical of Physics, Mitzpe Ramon, Israel (*unable to attend*)
 *"**Spacetime - Matter - Quantum Mechanics**" DICE2016, Sept. 12-16
 Castiglioncello, Tuscany, Italy