CURRICULUM VITAE March 2019

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
Telephone: (301) 405-6029 E-mail: blhu@umd.edu
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

Date	*School*	*Location*	*Major*	*Degree*
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

Date	*Institution*	*Position*
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

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 l4853	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

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 *Phase Transition in the Early Universe* (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 Spring 99,01	Dept. of Physics, Hong Kong University of Science and Technology	Visiting Professor
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 *Nonequilibrium Quantum Fields*
Nov. 1999	Institute for Nuclear Theory University of Washington	Workshop on *Quantum Field Nonequilibrium Processes*
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 *Workshop on Q. Decoherence and Information*
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, *Workshop on Condensed Matter meets Gravity*	
Sept.2007	Center of Excellence Interdisciplinary Program, Waseda University, Japan	
Feb. 2008	Kavli Institute for Theoretical Physics, U Calif, Santa Barbara, Program on *Nonequilibrium Quantum Processes in Particle Physics and Cosmology*	
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, Republic of China

6/2013-4 Visiting Senior Fellow,Center for Theoretical Physics, Fudan University, China

6-7/2015 Distinguished Chair Professor, Physics Department, Fudan University, China

11/2016 Distinguished Lecturer, National Center for Theoretical Sciences, Taiwan, ROC

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, International Workshop on *Quantum Coherence, Control, and Computing, since 2008 (Nara, Japan) - 2018 (StevensTech)*

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 (ended 2018)

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
* C N Yang Visiting Professor (2013) Chinese University of Hong Kong, Hong Kong
*Distinguished Chair Professor (2013), Academia Sinica, Taiwan, Republic of China
*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
* Dyson Visiting Professor (1994) Institute for Advanced Study, Princeton
*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

Perimeter Institute for Theoretical Physics, Waterloo, Canada
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 171, 272/272H)
Mathematical Methods for Physics (Physics 274)
Junior-Senior Courses for Physics Majors:
Modern Physics (Physics 421-422)
Thermal Physics (404)
Gravitation and Cosmology (475)
Junior-Senior Courses for Engineering Majors:
Modern Physics (Physics 420)
Undergraduate Physics Research: Physics 389
Independent Study Seminar: Physics 398
Graduate Physics *Core Course: Statistical Mechanics* (Physics 602)
Topical Courses: *General Relativity and Cosmology* (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 (Stanford PhD), David Wasson (Caltech PhD), Selman Herschfield (Cornell PhD)
1993-1994 Steve Sabian
1995-1996 Veronika Hubeny (UC Santa Barbara PhD)
1999-2000 Nick Cummings
Fall 2017 Matthew Yu, admitted in his Junior year to Perimeter Institute's International Scholar Program for his Masters Degree

4. *Master of Science* Students

James T. Wheeler, May 1981 now Faculty member at the Utah State University
Liam M. Healy, December 1981
Joseph Shanks, May 1982
Laura Mersini, May 1997 now professor at U North Carolina, Chapel Hill

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 Stylianapoulos, 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. September 2009
Tommaso Demarie, *Macquarie University*, Sydney, Australia. December 2013
Maaneli Derakhshani, Institute for History and Foundations of Science & Department of Mathematics, *Utrecht University*, Utrecht, The Netherlands. October 2017

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, Observertoire 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, Taiwán
*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 **a**nd 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. (*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 (*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 (*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 Materia Condensada* the **Brazilian Physical Society**, Aguas de Lindoia, Sao Paulo, Brazil, May 14-18
***kTLog2**: **Quantum Fluctuations and Information**" Cuenca, Spain, May 24-26
*First 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 (*unable to attend*)
*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
Visit to Romero-Isart's **Optomechanics and Quantum Information** Theory group at the University of Innsbruck, Austria Sept 16-18
*Distinguished Lecturer at the National Center for Theoretical Sciences, Hsinchu, Taiwan, ROC, Nov 22-24 http://phys.cts.nthu.edu.tw/actnews/index.php?Sn=314

2017 ***New Challenges in Quantum Thermodynamics**, Invited lectures at the National Center for Theoretical Sciences (NCTS), Taiwan, May 25-26.
-NCTS Workshop on **Nonequilibrium Quantum Phenomena**. May 31
***Ginzburg Centennial Conference** on Physics, the Tamm Theory Department, Lebedev Physical Institute. Moscow, May 29–June 3 (*unable to attend*)
*22nd Peyresq Physics Meeting on "The **Macro and Micro Structures of Spacetime**", Peyresq, France, June 10-16
*Second Conference on "**Quantum Matter, Information, and Gravity**" Jishou University, Zhangjiajie, Hunan Province, China, July 3-7 (*declined*)
*International Conference on **Relativistic Quantum Information** RQI-N2016, Yukawa Institute for Theoretical Physics, Kyoto University July 4-7
*Thematic programme "**Quantum Physics and Gravity**" at the Erwin Schrödinger Institute (ESI), Vienna May 29 -- July 6 (*unable to attend*)
- Descartes Centre for the **History and Philosophy of Science** and the Humanities, University of Utrecht, Holland. Oct 19-20
*EmQM17 **Ontology of Quantum Mechanics**, David Bohm Centennial Conference. University of London Oct 26– 28
*Distinguished Visiting Professor, National Center for Theoretical Sciences (NCTS), Taiwan Dec-Jan.

2018 *WE Heraeus Seminar on **Fluctuation Phenomena in Complex Systems**, Physikzentrum Bad Honnef, Germany May 6-10
-Workshop on **Nonequilibrium Quantum Phenomena**. National Center for Theoretical Sciences, Taiwan May 24-25
*23nd Peyresq Physics Meeting on "The **Macro and Micro Structures of Spacetime**", Peyresq, France, June 10-16
* QuIST IV: The 4th International Conference on **Quantum Information**, **Spacetime**, and **Topological Order**. Huangshan, China, July 1-6 (*Declined*)
* DICE2018, **Spacetime - Matter - Quantum Mechanics** Castiglioncello, Tuscany, Italy Sept. 17-21
*International Conference on **Relativistic Quantum Information** RQI-N2018, Vienna, Austria, Sept. 24-27
*5th International Workshop on **Quantum Coherence, Control, and Computing**, Stevens Institute of Technology, Oct 11-13.
*Distinguished Visiting Professor, National Center for Theoretical Sciences, Taiwan Dec.

***Publications** of* **Bei-Lok Hu** 胡悲樂 March 1, 2019

A. Papers Published in Refereed Journals:

Physics and Astronomy Research

1. "VIBRATIONAL ENERGY TRANSFER IN CO2 LASERS"
C. B. Moore, R. E. Wood, B. L. Hu and J. T. Yardley
Journal of Chemical Physics 46, 4222 (1967).

2. "PERBURBATIONS ON THE MIXMASTER UNIVERSE"
B. L. Hu and T. Regge, Physical Review Letters 29, 1616 (1972).

3. "SCALAR WAVES IN THE MIXMASTER UNIVERSE I. Helmholtz Equation in a Fixed Background", Physical Review D8, 1048 (1973).

4. "QUANTIZED SCALAR FIELDS IN a CLOSED ANISOTROPIC UNIVERSE'
B. L. Hu, S. A. Fulling and L. Parker, Physical Review D8, 2377 (1973)
.

5. "SCALAR WAVES IN THE MIXMASTER UNIVERSE II. Particle Creation" Physical Review D9, 3263 (1974).

6. "SEPARATION OF TENSOR EQUATIONS IN A HOMOGENEOUS SPACE BY GROUP THEORETICAL METHODS"
Journal of Mathematical Physics 15, 1748 (1974).

7. "CONFORMAL ENERGY-MOMENTUM TENSOR IN CURVED SPACETIMES: Adiabatic Regularization and Renormalization"
S. A. Fulling, L. Parker and B. L. Hu, Physical Review D10, 3905 (1974).

8. "NUMERICAL EXAMPLES FROM PERTURBATION ANALYSIS OF THE MIXMASTER UNIVERSE" Physical Review D12, 1551 (1975).

9. "EFFECT OF GRAVITON CREATION IN ISOTROPICALLY EXPLANDING UNIVERSES" B. L. Hu and L. Parker, Physics Letters 63A, 217 (1977).

10. "ANISOTROPY DAMPING THROUGH QUANTUM EFFECTS IN THE EARLY UNIVERSE"
B. L. Hu and L. Parker, Physical Review D17, 933 (1978).

11. "GRAVITATIONAL WAVES IN A BIANCHI TYPE I UNIVERSE"
Physical Review D18, 969 (1978).

12. "CALCULATION OF TRACE ANOMALY OF CONFORMAL TENSOR ENERGY- MOMENTUM IN KASNER SPACETIME BY ADIABATIC REGULARIZATION" Physical Review D18, 4460 (1978).

13. "TRACE ANOMALY OF THE ENERGY-MOMENTUM TENSOR OF QUANTIZED SCALAR FIELDS IN ROBERTSON-WALKER SPACETIME" Physics Letters 71A, 169-173 (1979)

14. "QUANTUM EFFECTS IN THE EARLY UNIVERSE I. Influence of Trace Anomalies on Anomalies on Isotropic, Classical Geometries" M. V. Fischetti, J. B. Hartle and B. L. Hu, Physical Review D20, 1757 (1979).

15. "QUANTUM EFFECTS IN THE EARLY UNIVERSE II. Effective Action for Scalar Fields in Homogeneous Cosmologies with Small Anisotropy" J. B. Hartle and B. L. Hu, Physical Review D20, 1772 (1979).

16. "QUANTUM EFFECTS IN THE EARLY UNIVERSE III. Dissipation of Anisotropy by Scalar Particle Production" J. B. Hartle and B. L. Hu, Physical Review D21, 2756 (1980).

17. "THE INFLUENCE OF COSMOLOGICAL GRAVITATIONAL WAVES ON A NEWTONIAN BINARY SYSTEM" B. Mashhoon, B. J. Carr and B. L. Hu, Astrophysical Journal 246, 569 (1981).

18. "EFFECT OF FINITE TEMPERATURE QUANTUM FIELDS ON THE EARLY UNIVERSE" Physics Letters 103B, 331 (1981).

19. "FINITE TEMPERATURE QUANTUM FIELDS IN EXPANDING UNIVERSES" Physics Letters 108B, 19 (1982).

20. "VACUUM VISCOSITY DESCRIPTION OF QUANTUM PROCESSES IN THE EARLY UNIVERSE" Physics Letters 90A, 375 (1982).

21. "QUANTUM DISSIPATIVE PROCESSES AND GRAVITATIONAL ENTROPY OF THE UNIVERSE" Physics Letters 97A, 368 (1983).

22. "FINITE TEMPERATURE EFFECTIVE POTENTIAL FOR PHI4 THEORY in ROBERTSON-WALKER UNIVERSES" Physics Letters 123B, 189 (1983).

23. "SYMMETRY BEHAVIOR IN THE EINSTEIN UNIVERSE: Effect of Spacetime Curvature and Arbitrary Field Coupling" D. J. O'Connor, B. L. Hu and T. C. Shen. Physics Letters 130B, 31 (1983).

24. "EFFECTIVE LAGRANGIAN FOR Phi4 THEORY IN CURVED SPACETIME WITH VARYING BACKGROUND FIELDS: Quasi-Local Approximation" B. L. Hu and D. J. O'Connor, Physical Review D30, 743 (1984).

25. "SYMMETRY BEHAVIOR IN THE STATIC TAUB UNIVERSE: Effect of Curvature Anisotropy" T. C. Shen, B. L. Hu and D. J. O'Connor, Physical Review D31, 2401 (1985).

26. "FINITE TEMPERATURE ENERGY DENSITY AND EFFECTIVE QUASI-POTENTIAL IN ANISOTROPIC UNIVERSES"
L. F. Chen and B. L. Hu, Physics letters 160B, 36 (1985).

27. "INFRARED BEHAVIOR AND FINITE SIZE EFFECTS IN INFLATIONARY COSMOLOGY"
B. L. Hu and D. J. O'Connor, Physical Review Letters 56, 1613 (1986).

28. "MIXMASTER INFLATION"
B. L. Hu and D. J. O'Connor,
Physical Review D (Rapid Comm.) 34, 2535 (1986).

29. "WEAK ANGLE FROM KALUZA-KLEIN THEORY WITH DEFORMED INTERNAL SPACE"
B. L. Hu and T. C. Shen, Physics Letters B178, 373 (1986).

30 "INTRINSIC MEASURES OF FIELD ENTROPY AND COSMOLOGICAL PARTICLE CREATION"
B. L. Hu and D. Pavon, Physics Letters B180, 329 (1986).

31. "CLOSED TIME-PATH FUNCTIONAL FORMALISM IN CURVED SPACETIME: Application to Cosmological Backreaction Problems"
E. Calzetta and B. L. Hu, Physical Review D35, 495 (1987).

32. "FINITE TEMPERATURE QUANTUM FIELD THEORY IN CURVED SPACETIME: Quasi-Local Effective Lagrangians"
B. L. Hu, R. Critchley and Aris Stylianopoulos,
Physical Review D35, 510 (1987).

33. "ENTROPY GENERATION IN COSMOLOGICAL PARTICLE CREATION AND INTERACTIONS: A Statistical Subdynamics Analysis"
B. L. Hu and H. E. Kandrup, Physical Review D35, 1776 (1987).

34. "SYMMETRY BEHAVIOR IN CURVED SPACETIME: FINITE SIZE EFFECT AND DIMENSIONAL REDUCTION"
B. L. Hu and D. J. O'Connor, Physical Review D36, 1701 (1987).

35. "NON-EQUILIBRIUM QUANTUM FIELDS: CLOSED TIME-PATH EFFECTIVE ACTION, WIGNER FUNCTION AND BOLTZMANN EQUATION" E. Calzetta and B. L. Hu, Physical Review D37, 2878 (1988).

36. "QUANTUM KINETIC FIELD THEORY IN CURVED SPACETIME WIGNER FUNCTION AND LIOUVILLE EQUATION"
E. Calzetta, S. Habib and B. L. Hu, Physical Review D37, 2901 (1988).

37. "QUANTUM EFFECT OF INTERACTING FIELDS IN THE EARLY UNIVERSE" B. L. Hu and Y. H. Zhang, Physical Review D37, 2151 (1988).

38. "SYMMETRY BEHAVIOR IN COSMOLOGICAL SPACETIME: Effect of Slowly-Varying Background Fields" S. Sinha and B. L. Hu, Physical Review D38, (1988) 2422-2433.

39. "ON FINITE SIZE SYSTEMS" D. J. O'Connor, C. R. Stephens and B. L. Hu, Annals of Physics (N.Y.) 190, (1989) 310-353.

40. "INFRARED BEHAVIOR OF QUASILOCAL SYSTEMS AT FINITE TEMPERATURE" Aris Stylianopoulos and B. L. Hu, Physical Review D39 (1989) 3647.

41. "DISSIPATION IN QUANTUM FIELDS AND SEMICLASSICAL GRAVITY" Physica A158 (1989) 399-424.

43. "WIGNER DISTRIBUTION FUNCTION AND PHASE-SPACE FORMULATION OF QUANTUM COSMOLOGY" E. Calzetta and B. L. Hu, Physical Review D40 (1989) 380-389.

44. "DISSIPATION OF QUANTUM FIELDS FROM PARTICLE CREATION" E. Calzetta and B. L. Hu, Physical Review D40, 656-659 (1989).

45. "VALIDITY OF THE MINISUPERSPACE APROXIMATION: An Example from Interacting Quantum Field Theory" S. Sinha and B. L. Hu, Physical Review D44, 1028 (1991)

46. "QUANTUM BROWNIAN MOTION IN A GENERAL ENVIRONMENT I. Exact Master Equation with Nonlocal Dissipation and Colored Noise" B. L. Hu, J. P. Paz and Yuhong Zhang, Physical Review D45, 2843 (1992).

47. "CRITICAL DYNAMICS IN THE EARLY UNIVERSE" Class. Quantum Gravity 10, S93-S100 (1993)

48. "QUANTUM STATISTICAL PROCESSES IN THE EARLY UNIVERSE" Vistas in Astronomy 37, 391-407 (1993)

49. "QUANTUM BROWNIAN MOTION IN A GENERAL ENVIRONMENT II. Nonlinear Coupling and Perturbative Approach" B. L. Hu, J. P. Paz and Yuhong Zhang, Physical Review D47, 1576 (1993).

50. "SQUEEZED STATES AND UNCERTAINTY PRINCIPLE AT FINITE TEMPERATURE" B. L. Hu and Yuhong Zhang, Modern Physics Letters A8, 3575-3584 (1993).

51. "SQUEEZED VACUUA AND THE QUANTUM STATISTICS OF

COSMOLOGICAL PARTICLE CREATION" B. L. Hu, G. Kang and A. Matacz, International Journal of Modern Physics A9, 991 (1994).

52. "QUANTUM BROWNIAN MOTION IN A BATH OF PARAMETRIC OSCILLATORS: A Model for System-Field Interactions" B. L. Hu and A. Matacz, Physical Review D49, 6612 (1994).

53. 'NOISE AND FLUCTUATIONS IN SEMICLASSICAL GRAVITY" E. Calzetta and B. L. Hu, Physical Review D49, 6636 (1994).

54. "BACKREACTION IN SEMICLASSICAL GRAVITY: Einstein-Langevin Equation" B. L. Hu and A. Matacz, Physical Review D51, 1577-1586 (1995).

55. "FLUCTUATION-DISSIPATION RELATION FOR SEMICLASSICAL COSMOLOGY" B. L. Hu and S. Sinha, Physical Review D51, 1587-1606 (1995).

56. "UNCERTAINTY PRINCIPLE FOR QUANTUM OPEN SYSTEMS" B. L. Hu and Yuhong Zhang, Int. J. Modern Physics A10, 4537-4561 (1995).

57. "DECOHERENCE, DELOCALIZATION AND IRREVERSIBILITY IN QUANTUM CHAOTIC SYSTEMS" K. Shiokawa and B. L. Hu, Physical Review E52, 2497-2509 (1995).

58. "QUANTUM FLUCTUATIONS, DECOHERENCE OF THE MEAN FIELD, AND STRUCTURE FORMATION IN THE EARLY UNIVERSE" E. Calzetta and B. L. Hu, Physical Review D52, 6770-6788 (1995).

59. "STOCHASTIC THEORY OF ACCELERATED DETECTORS IN QUANTUM FIELDS" A. Raval, B. L. Hu and J. Anglin, Physical Review D53, 7003-7019 (1996).

60. "THERMAL RADIATION FROM BLACK HOLES AND COSMOLOGICAL SPACETIMES" B. L. Hu and A. Raval, Modern Physics Letters A 32/33, 2625-2638 (1996).

61. "STOCHASTIC BEHAVIOR OF EFFECTIVE FIELD THEORIES ACROSS THRESHOLD" E. Calzetta and B. L. Hu, Physical Review D**55**, 3536-3551 (1997).

62. "NEAR-THERMAL RADIATION IN DETECTORS, MIRRORS AND BLACK HOLES: A Stochastic Approach" A. Raval, B. L. Hu and Don Koks, Physical Review D**55**, 4795-4812 (1997).

63. "ENTROPY AND UNCERTAINTY OF SQUEEZED QUANTUM OPEN SYSTEMS"

D. Koks, A. Matacz and B. L. Hu, Physical Review D**55**, 5917-5935 (1997).

64. "FLUCTUATIONS in the VACUUM ENERGY DENSITY OF QUANTUM FIELDS IN CURVED SPACETIMES VIA THE GENERALIZED ZETA FUNCTION"
N. G. Phillips and B. L. Hu, Physical Review D**55**, 6123-6134 (1997).

65. "O(N) Quantum Fields in Curved Spacetime"
S. A. Ramsey and B. L. Hu, Physical Review D**56**, 661-677 (1997).

66. "NONEQUILIBRIUM INFLATON DYNAMICS AND REHEATING I. Backreaction of Parametric Particle Creation and Curved Spacetime Effects" S. A. Ramsey and B. L. Hu, Physical Review D**56,** 678-705 (1997).

67. "THERMAL PARTICLE CREATION IN COSMOLOGICAL SPACETIMES: A Stochastic Approach"
Don Koks, B. L. Hu, A. Matacz and Alpan Raval,
Physical Review D**56**, 4905-4916(1997).

68. "NONEQUILIBRIUM INFLATON DYNAMICS AND REHEATING II. Fermion Production, Noise and Stochasticity"
S. A. Ramsey, B. L. Hu and A. Stylianopoulos,
Physical Review D**57**, 6003-6021 (1998).

69. "WAVE PROPAGATION IN STOCHASTIC SPACETIMES: Particle Creation, Amplification and Localization"
B. L. Hu and K. Shiokawa, Physical Review D**57**, 3474-3483 (1998).

70. "NON-EQUILIBRIUM DYNAMICS OF A THERMAL PLASMA IN A GRAVITATIONAL FIELD"
Antonio Campos and B. L. Hu, Physical Review D**58**, 125021 (1998). [hep-ph/9805485]

71. "DEFECT FORMATION AND CRITICAL DYNAMICS IN THE EARLY UNIVERSE" G. J. Stephens, E. A. Calzetta, B. L. Hu and S. A. Ramsey, Physical Review D**59** (1999) 045009 [gr-qc/9808059]

72. "INFLUENCE ACTION AND DECOHERENCE OF HYDRODYNAMIC MODES" E. Calzetta and B. L. Hu, Physical Review D**59**, (1999) 065018. [quant-ph/9809084]

73. "FLUCTUATIONS IN A THERMAL FIELD AND DISSIPATION OF A BLACK HOLE SPACETIME: FAR-FIELD LIMIT"
A. Campos and B. L. Hu, Int. J. Theoretical Physics **38** (1999) 1253-1271. [gr-qc/9812034]

74. "STOCHASTIC GRAVITY"

B. L. Hu, Int. J. Theoretical Physics **38** (1999) 2987-3037 [gr-qc/9902064]

75. "FINITE NUMBER AND FINITE SIZE EFFECT IN RELATIVISTIC BOSE EINSTEN CONDENSATION" K. Shiokawa and B. L. Hu, Physical Review D**60** (1999) 105016 [arXiv:quant-ph/9808006]

76 "ATOM-FIELD INTERACTION: EXACT MASTER EQUATIONS FOR NON-MARKOVIAN DYNAMICS, DECOHERENCE AND RELAXATION" C. Anastopoulos and B. L. Hu, Physical Review A **62** (2000) 033821, [quant-ph/9901078]

77. "STOCHASTIC DYNAMICS OF CORRELATIONS IN QUANTUM FIELD THEORY : From Schwinger-Dyson to Boltzmann-Langevin Equations" E. Calzetta and B. L. Hu, Physical Review D**61** (2000) 025012

78. "HYDRODYNAMIC TRANSPORT FUNCTIONS FROM QUANTUM KINETIC FIELD THEORY E. Calzetta, B. L. Hu, S. A. Ramsey, Physical Review D**61** (2000) 125013

79. **Fluctuations of Energy Density and Validity of Semiclassical Gravity** B. L. Hu and Nicholas G. Phillips, Int. J. Theor. Phys. **39**, 1661–1674 (2000) arXiv:gr-qc/0004006

80. **Fluctuations of the Vacuum Energy Density in Minkowski and Casimir States via Smeared Quantum Fields and Point-Separation** N. G. Phillips and B. L. Hu, Physical Review D **62** (2000) 084017

81. **Noise Kernel in Stochastic Gravity and Stress Energy Bi-Tensor of Quantum Fields in Curved Spacetimes,** Nicholas. G. Phillips, B. L. Hu, Phys. Rev. D**63** (2001) 104001 [gr-qc/0010019]

82. **Coarse-Grained Effective Action and Renormalization Group Theory in Semiclassical Gravity and Cosmology** Esteban A. Calzetta, Bei-Lok Hu, Francisco D. Mazzitelli *Physics Report*. **352** (2001) 459-520 [hep-th/0102199]

83. **Notes on Black Hole Phase Transitions**, Greg Stephens and B. L. Hu, Int. J. Theor. Phys. **40** (2001) 2183-2200 [gr-qc/0102052]

84. **Stochastic Theory of Relativistic Particles Moving in a Quantum Field: Scalar Abraham-Lorentz-Dirac-Langevin Equation, Radiation Reaction and Vacuum Fluctuations,** Philip R. Johnson and B. L. Hu, Phys. Rev. **D65** (2002) 065015 [quant-ph/0012137]

85. **A Kinetic Theory Approach to Quantum Gravity**
Invited talk given at the 6th Peyresq Meeting, France, June 2001.
B. L. Hu, Int. J. Theor. Phys. **41** (2002) 2111-2138 [gr-qc/0204069]

86. **Decoherence of Two-Level Systems Can Be Very Different from Brownian Particles**, B. L. Hu, *Chaos, Solitons and Fractals*, **16**, (2003) 391-398 [quant-ph/0203001]

87. **Noise Kernel and Stress Energy Bi-Tensor of Quantum Fields in Hot Flat Space and the Schwarzschild Metric: Failure of the Gaussian Approximation**,
N. G. Phillips and B. L. Hu, Phys. Rev. D**67** (2003) 104002 [gr-qc/0209056]

88. **Black Hole Fluctuations and Backreaction in Stochastic Gravity**,
S. Sinha, A. Raval and B. L. Hu in Foundations of Physics **33** (2003) 37-64 [gr-qc/0210013]

89. **Stochastic gravity: A primer with applications**,
B. L. Hu and E. Verdaguer, Class. Quant. Grav. **20** (2003) R1-R42 [gr-qc/0211090]

90. **Moving Atom-Field Interaction: Quantum Motional Decoherence and Relaxation** S. Shresta and B. L. Hu, Physical Review A **68** (2003) 012110 [quant-ph/0301180]

91. **Moving Atom-Field Interaction: Correction to Casimir-Polder Effect from Coherent Backreaction** S. Shresta, B. L. Hu and N. G. Phillips, Phys. Rev. A **68**, 062101 (2003) [quant-ph/0302004]

92. **Bose-Einstein condensate collapse and dynamical squeezing of vacuum fluctuations** E. Calzetta and B. L. Hu, Physical Review A**68** (2003) 043625 [cond-mat/0207289]

93. **Correlation Entropy of an Interacting Quantum Field and H-theorem for the O(N) Model** E. A. Calzetta and B. L. Hu, Physical Review D**68** (2003) 065027 [hep-ph/0305326]

94. **Stochastic gravity: Theory and Applications**,
B. L. Hu and E. Verdaguer, in *Living Reviews in Relativity* **7** (2004) 3. [gr-qc/0307032] lrr-2004-3; Updated in **11** (2008) 3 [arXiv:0802.0658]

95. **Radiation Reaction in Schwarzschild Spacetime: Retarded Green's Function via Hadamard-WKB Expansion**
Paul R. Anderson and B. L. Hu, Phys. Rev. D **69**, 064039 (2004) [gr-qc/0308034] ; **D75**, 129901(E) (2007); D **77**, 089901(E) (2008)

96. **Nonequilibrium Dynamics of Optical Lattice-Loaded BEC Atoms: Beyond HFB Approximation**
Ana Maria Rey, B. L. Hu, Esteban Calzetta, Albert Roura, Charles Clark, Phys. Rev. A **69**, 033610 (2004) [cond-mat/0308305]

97. **BEC with Fluctuations: Beyond HFB Approximation**
Ana Maria Rey, B. L. Hu, Esteban Calzetta, Albert Roura, Charles Clark, Laser Physics **14**, (2004) 1

98. **Vacuum Fluctuations and Moving Atoms/Detectors: From Casimir-Polder to Unruh -Davies-DeWitt-Fulling Effect**
B. L. Hu, A. Roura and S. Shresta, Journal of Optics B – Quantum Semiclass. Opt. **6** (2004) S698-S705 [quant-ph/0401188]

99. **Induced Metric Fluctuations and Validity of Semiclassical Gravity**
B. L. Hu, Albert Roura and E. Verdaguer, Physical Review D **70** (2004) 044002 [gr-qc/0402029]

100. **Stability of Semiclassical Gravity Solutions with respect to Quantum Fluctuations** B. L. Hu, Albert Roura and E. Verdaguer, Int. J. Theor. Phys. **43** (2004) 749-766 [gr-qc/0508010]

101. **Comment on "Enhancing Acceleration Radiation from Ground-State Atoms via Cavity Quantum Electrodynamics"**
B. L. Hu and Albert Roura, Phys. Rev. Lett. **93** (2004) 129301-1 [quant-ph/0402088]

102. **Qubit Decoherence and Non-Markovian Dynamics at Low Temperatures via an Effective Spin-Boson Model**
K. Shiokawa and B. L. Hu, Phys. Rev. A **70** (2004) 062106 [quant-ph/0405147]

103. **Non-Markovian qubit dynamics in a thermal field bath: Relaxation, decoherence and entanglement**
S. Shresta, C. Anastopoulos, A. Dragulescu, and B. L. Hu, Phys. Rev. A **71** (2005) 022109 [quant-ph/0408084]

104. **Unruh Effect in a Uniformly Accelerated Charge: From quantum fluctuations to classical radiation.**
Philip R. Johnson and B. L. Hu, Foundations of Physics **35** (2005) 1117-1147 [gr-qc/0501029]

105. **Classical and Commutative Limits of Noncommutative Quantum Mechanics: A Superstar Wigner-Moyal Equation**
A. Eftekharzadeh and B. L. Hu, Brazilian J. Phys. **35** (2005) 333-342 [hep-th/0504150]

106. **Can Spacetime be a Condensate?** Int. J. Theor. Phys. **44** (2005) 1785-1806 [arXiv:gr-qc/0503067v2]

107. **Early Universe Quantum Processes in BEC Collapse Experiments.** E. Calzetta and B. L. Hu, Int. J. Theor. Phys. **44** (2005) 1691 [cond-mat/0503367]

108. Quantum kinetic theory of a Bose-Einstein gas confined in a lattice Ana Maria Rey, B. L. Hu, Esteban Calzetta and Charles Clark, Phys. Rev. A **72** (2005) 023604 [cond-mat/0412066]

109. **Self-Force with a Stochastic Component from Radiation Reaction of a Scalar Charge Moving in Curved Spacetime** Chad R. Galley and B. L. Hu, Phys. Rev. D **72**, 084023 (2005) [gr-qc/0505085]

110**. Bose-Einstein Condensate Superfluid-Mott Insulator Transition in an Optical Lattice** E. Calzetta, B. L. Hu and A. M. Rey, Phys. Rev. A **73**, 023610 (2006) [cond-mat/0507256]

111. **Self-force on a scalar charge in radial infall from rest using the Hadamard-WKB expansion** P. R. Anderson, A. Eftekharzadeh and B. L. Hu, Phys. Rev. D **73** (2006) 064023 [gr-qc/0507067] ; D **77,** 089902(E) (2008)

112. **Gravitational wave detectors based on matter wave interferometers (MIGO) are no better than laser interferometers (LIGO)** Albert Roura, Dieter R. Brill, B. L. Hu, Charles W. Misner and William Phillips, Phys. Rev. D**73** (2006) 084018 [gr-qc/0409002]

113. **Electromagnetic and Gravitational Radiation Reaction in Curved Spacetime: Self-Force derivation from stochastic field theory** Chad R. Galley, B. L. Hu and S. Y. Lin, Phys. Rev. D **74** (2006) 024017 [gr-qc/0603099]

114. **Accelerated Detector - Quantum Field Correlations: From Vacuum Fluctuations to Radiation Flux** S. Y. Lin and B. L. Hu, Phys. Rev. D**73** (2006) 124018 [quant-ph/0507054]

115. **Fluctuations of an evaporating black hole from back reaction of its Hawking radiation: Questioning a premise in earlier work** B.L. Hu, Albert Roura, Int. J. Theor. Phys. **46**, 2204–2217 (2007) [gr-qc/0601088]

116. **Non-Markovian Error Deterrence by Dynamical Decoupling in a General Environment** K. Shiokawa and B. L. Hu,

Quantum Information Processing **6**, 55 (2007) [quant-ph/0507177]

117. **New Insights into Uniformly Accelerated Detector in a Quantum Field:** Shih-Yuin Lin and B. L. Hu, in Foundations of Physics **37**, 480 (2007) [gr-qc/0610024]

118. **Backreaction and Unruh Effect - New Insights from Exact Solutions of Uniformly Accelerated Detectors**
S. Y. Lin and B. L. Hu, Phys. Rev. D **76** (2007) 064008 [gr-qc/0611062]

119. **Stochastic Gross-Pitaevsky Equation for BEC via Coarse-Grained Effective Action** Esteban Calzetta, B. L. Hu, Enric Verdaguer, Int. J. Mod. Phys. B **21** (2007) 4239-4247 [cond-mat/0702046]

120. **Decoherence in Quantum Gravity: Issues and Critiques**
C. Anastopoulos and B. L. Hu, J. Phys. Conf. Ser. **67** (2007) 012012 [gr-qc/0703137]

121. **Metric fluctuations of an evaporating black hole from back-reaction of stress tensor fluctuations** B. L. Hu and Albert Roura, Phys. Rev. D **76** (2007) 124018 [arXiv:0708.3046]

122. **Exact Master Equation and Quantum Decoherence for Two Harmonic Oscillators in a General Environment** C. H. Chou, Ting Yu and B. L. Hu, Phys. Rev. E **77** (2008) 011112 [quant-ph/0703088]

123. **Quantum Brownian Motion of a Macroscopic Object in a General Environment,** C. H. Chou, B. L. Hu and Ting Yu, Physica A**387** (2008) 432- 444 [**arXiv:0708.0882**]

124. **Dynamics of Atom- Field Entanglement: Towards strong coupling and non-Markovian regimes** Nick Cummings and B. L. Hu, Phys. Rev. A**77**, 053823 (2008) [**arXiv:0708.2257**]

125. **Quantum Entanglement, Recoherence and Information Flow in a Particle- Field System: Implications for black hole information issue** S. Y. Lin and B. L. Hu, Class. Quant. Grav. (special issue) **25**:154004 (2008) **arXiv:0710.0435**

126. **Quantum Entanglement and Coherence in Black Hole information from a Detector (Atom) -Field Analog**
B. L. Hu and S. Y. Lin, in Proceedings of Workshop "From Quantum to Emergent Gravity: Theory and Phenomenology." SISSA, Trieste, Italy, June 11-15, 2007. Online publications **PoSQG-Ph:019** (2007) **[arXiv:0712.3643]**

127. **Intrinsic and Fundamental Decoherence : Issues and Problems**

C. Anastopoulos and B. L. Hu, Class. Quant. Grav. (special issue) **25,** 154003 (2008) **[arXiv:0803.3447**]

128. **A Chain-Boson Model for the Decoherence and Relaxation of a Few Coupled SQUIDs in a Phonon Bath** A. J. Skinner, B.-L. Hu, Phys. Rev. B **78**, 014302 (2008) [arXiv:0706.1549]

129. **Disentanglement of two harmonic oscillators in relativistic motion** Shih-Yuin Lin, C. H. Chou and B. L. Hu, Phys. Rev. D**78,** 125025 (2008) [arXiv:0803.3995]

130. **Self Force on extreme mass ratio inspirals via curved spacetime effective field theory** Chad R. Galley and B. L. Hu, Phys. Rev. D**79,** 064002 (2009) [arXiv:0801.0900]

131. **Temporal and Spatial Dependence of Quantum Entanglement from Field Theory Perspective**, S. Y. Lin and B. L. Hu, Phys. Rev. D **79**, 085020 (2009) arXiv:0812.4391

132. **Emergent /Quantum Gravity: Macro/Micro Structures Spacetime** in DICE2008 September 22–26, 2008, Castello Pasquini/ Castiglioncello (Tuscany), Italy, in J. Phys. Conf. Ser. **174** (2009) 012015 arXiv:0903.0878

133. **Entanglement Dynamics of Two Atoms interacting through a quantum field** C. Anastopoulos, S. Shresta and B. L. Hu, Quantum Information Processing **8,** 594 (2009) , *Special Issue on Quantum Decoherence and Entanglement* arXiv:0909.0223

134. **Nonequilibrium Casimir-Polder Force from Influence Functional**, R. Behunin and B. L. Hu, *J. Phys. A: Math. Theor.* **43** (Fast Track) 012001 (2010) arXiv:0907.3212

135. **Entanglement Creation between Two Causally-Disconnected Objects,** Shih-Yuin Lin and B. L. Hu, Phys. Rev. D **81,** 045019 (2010) arXiv:0910.5858

136. **Quantum Entanglement and Entropy in Particle Creation,** Shih-Yuin Lin, Chung-Hsien Chou and B. L. Hu , Phys. Rev **D81**, 084018 (2010) arXiv:1001.4922

137. **Vortex Formation in Two-Dimensional Bose Gas,** E. Calzetta, Kwan-yuet Ho and B. L. Hu, J. Phys. B: At. Mol. Opt. Phys. 43 (2010) 095004. arXiv:0910.4225

138. **Nonequilibrium Forces between two Neutral Atoms Mediated by a Quantum Field** Ryan Behunin and B. L. Hu, Phys. Rev. A 82, 022507 (2010) [arXiv:1002.2728]

139. **The Rotating Wave Approximation: Consistency and Applicability from a Quantum Open Systems Analysis,**
Chris Fleming, Nicholas Cummings, C. Anastopoulos and B. L. Hu,
J. Phys. A: Math. Theor. 43 (2010) 405304. [arXiv:1003.1749]

140. **Exact analytical solutions to the master equation of quantum Brownian motion for a general environment**
Chris Fleming, A. Roura and B. L. Hu, Ann. Phys. (NY) 326 (2011) 1207–1258 [arXiv:1004.1603] doi:10.1016/j.aop.2010.12.003

141. **Nonequilibrium Atom-Dielectric Forces Mediated by a Quantum Field** Ryan Orson Behunin, Bei-Lok Hu, Phys. Rev. A 84, 012902 (2011) [arXiv:1102.1765]

142. **Gravity and Nonequilibrium Thermodynamics of Classical Matter** Int. J Mod. Phys. D **20**:697-716 (2011) [arXiv:1010.5837]

143. **Macroscopic Quantum Phenomena from the Large N Perspective** C. H. Chou, B. L. Hu and Y. Subasi in the 5th DICE meeting September 2010, Castello Pasquini/ Castiglioncello (Tuscany), Italy, J. Phys. Conf. Ser. **306** 012002 (2011) arXiv:1106.0556

144. **Macroscopic Quantum Phenomena from the Correlation, Coupling and Criticality Perspectives** C. H. Chou, B. L. Hu and Y. Subasi in the 2010 IARD Conference, May 2010 Hualien, Taiwan, J. Phys. Conf. Ser. **330**, 012003 (2011) arXiv:1107.3008v1 doi:10.1088/1742-6596/330/1/012003

145. **Correlations of the stress-energy tensor in AdS spaces via the generalized zeta-function method** H. T. Cho and B. L. Hu, IARD2010 Conference, Hualien, Taiwan (May 2010), J. Physics (Conf. Ser.) **330**, 012002 (2011) arXiv:1105.5302

146. **Stress-energy Tensor Correlators of a Quantum Field in Euclidean R^N and AdS^N spaces via the generalized zeta-function method** H. T. Cho and B. L. Hu, Phys. Rev. D**84**, 044032 (2011) [arXiv:1105.5308]

147. **Initial state preparation with dynamically generated system-environment correlations** C. H. Fleming, B. L. Hu and A. Roura, Phys. Rev. E **84**, 021106 (2011) [arXiv:1101.2668 **]**

148. Effect of Interatomic Separation on Entanglement Dynamics in a Two-Atom Two-Mode Model K. Sinha, N.I. Cummings, B.L. Hu J. Phys. B:

At. Mol. Opt. Phys. 45 (2012) **035503 DOI: 10.1088/0953-4075/45/3/035503** [arXiv:1108.2681]

149. Non-Markovian Dynamics and Entanglement of Two-level Atoms in a Common Field Chris Fleming, Nicholas Cummings, C. Anastopoulos and B. L. Hu, J. Phys. A: Math. Theor. 45 (2012) 065301. [arXiv:1101.2668]

150. **Quantum and Classical Fluctuation Theorems from a Decoherent-histories Open-system Analysis**
Yigit Subasi and B. L. Hu, Phys. Rev. E **85,** 011112 (2012) arXiv:1109.6696v1

151. Non-Markovian Dynamics of Open Quantum Systems: Stochastic Equations and their Perturbative Solutions
C. H. Fleming and B. L. Hu, Ann. Phys. (N.Y.) **327** (2012), pp. 1238-1276
arXiv:1112.0252

152. Noise Kernel for a Quantum Field in Schwarzschild Spacetime under the Gaussian approximation A. Eftekharzadeh, Jason Bates, Albert Roura, P. R. Anderson and B. L. Hu, Phys. Rev. D85, 044037 (2012) arXiv:1011.4903

153. Stress-energy Tensor Correlators in N-dim Hot Flat Space via the Generalized Zeta-Function Method
H. T. Cho and B. L. Hu, J. Phys. A: Math. Theor. 45 (2012) 374013**.** Special Issue in honour of J. Stuart Dowker doi:10.1088/1751-8113/45/37/374013 [arXiv:1202.0732]

154. The Decoherence Strength of Non-Markovian Environments
C. H. Fleming, B. L. Hu and A. Roura, Physica A391 (2012), 4206-4214 [arXiv:1011.3286]

155. Emergence: Key Physical Issues for Deeper Philosophical Inquires Invited talk, International Conference on Self-Organization and Emergence: Emergent Quantum Mechanics (EmerQuM11) November 10th–13th Vienna, Austria. J. Phys. Conf. Ser. 361 (2012) 012003 [arXiv:1204.1077] doi:10.1088/1742-6596/361/1/012003

156. Nonequilbrium dynamics of charged particles in an electromagnetic field: Causal and stable backreaction via 1/c expansion in QED C. H. Fleming, Philip Johnson and B. L. Hu, J. Phys. A: Math. Theor. 45 (2012) 255002 [arXiv:1106.1886]

157. Entanglement Dynamics between an inertial and an asymptotically uniformly accelerated detector
David Ostapchuk, S. Y. Lin, R. Mann and B. L. Hu, JHEP 07 (2012) 072 [arXiv:1108.3377] 10.1007/JHEP07(2012)072

158. Entanglement between Oscillators in Relativistic Motion and a Quantum Field, B. L. Hu, S. Y. Lin and J. Louko, Class. Quant. Grav. **29** (2012) 224005. *Special Issue on Relativistic Quantum Information* [arXiv:1205.1328] http://dx.doi.org/10.1088/0264-9381/29/22/224005

159. The Equilibrium states of open quantum systems in the strong coupling regime Y.Subasi, C. Fleming, J. Taylor and B. L. Hu, Phys. Rev. E86, 061132 (2012) [arXiv:1206.2707]

160. Oscillator-Field Models of Moving Mirrors in Quantum Optomechanics Chad R. Galley, Ryan Behunin and B. L. Hu, Phys. Rev. A 87, 043832 (2013) [arXiv:1204.2569]

161. Pathways toward understanding Macroscopic Quantum Phenomena B. L. Hu and Y. Subasi, DICE 2012, J. Phys. Conf. Series **442**, 012010 (2013) [arXiv:1304.7839]

162. Non-Equilibrium Fluctuation-Dissipation Inequality, and Non-Equilibrium Uncertainty Principle
C. H. Fleming, B. L. Hu and A. Roura Phys. Rev. E **88**, 012102 (2013) [arXiv:1012.0681].

163. A Master Equation for Gravitational Decoherence: Probing the Textures of Spacetime
C. Anastopoulos and B. L. Hu, Class. Quant. Grav. **30**, 165007 (2013) [arXiv:1305.5231] 10.1088/0264-9381/30/16/165007

164. Boundary Effects on Quantum Entanglement and its Dynamics in a Detector-Field System, Rong Zhou, R. Behunin, S. Y. Lin and B. L. Hu JHEP **08** (2013) 040 [arXiv:1301.0073]

165. Unruh Effect under Nonequilibrium Conditions: Oscillatory Motion of an Unruh-DeWitt detector
Jason Doukas, S. Y. Lin, B. L. Hu and R. Mann, JHEP **11** (2013) 119 [arXiv:1307.4360] DOI: 10.1007/JHEP11(2013)119

166. Noise kernel near the horizon of de Sitter space
Jason Bates, H. T. Cho, P. R. Anderson and B. L. Hu, Class. Quant. Grav. **31** (2014) 025015. [arXiv:1301.2501] 10.1088/0264-9381/31/2/025015

167. Gravitational Decoherence, Alternative Quantum Theories and Semiclassical Gravity
Second International Conference on Emergent Quantum Mechanics, Austrian Academy of Science, Vienna, October 3-6, 2013 J. Phys. Conf. Ser. **504**, 012021 (2014) [arXiv:1402.6584] 10.1088/1742-6596/504/1/012021

168. Problems with the Newton-Schrödinger Equations
C. Anastopoulos and B. L. Hu, Focus Issue on Gravitational Quantum Physics, New J. Physics 16 (2014) 085007 [arXiv:1403.4921]
http://dx.doi.org/10.1088/1367-2630/16/8/085007

169. Noise kernels of stochastic gravity in conformally-flat spacetimes
H. T. Cho and B. L. Hu, Class. Quantum Grav. 32 (2015) 055006.
[arXiv:1407.3907] http://dx.doi.org/10.1088/0264-9381/32/5/055006

170. Quantum Teleportation between Moving Detectors
Shih-Yuin Lin, Chung-Hsien Chou, B. L. Hu, Phys. Rev. D91, 084063 (2015)
[arXiv:1502.03539] 10.1103/PhysRevD.91.084063

171. Probing a Gravitational Cat State
C. Anastopoulos and B. L. Hu, Class. Quant. Grav. **32**, 165022 (2015).
[arXiv:1504.03103] 10.1088/0264-9381/32/5/055006

172. Nonequilibrium Steady State in Open Quantum Systems: Influence Action, Stochastic Equation and Power Balance
J. T. Hsiang and B. L. Hu, Annals of Physics **362**, 139-169 (2015)
[arXiv:1405.7642] 10.1016/j.aop.2015.07.009

173. Mirror-Field Entanglement in a Microscopic model for Quantum Optomechanics Kanupriya Sinha, S. Y. Lin and B. L. Hu,
Phys. Rev. A **92**, 023852 (2015) [arXiv:1502.00615] 10.1103/PhysRevA.92.023852

174. Distance and Coupling Dependence of Entanglement in the Presence of a Quantum Field J. T. Hsiang and B. L. Hu, Phys. Rev. D **92**, 125026 (2015) [arXiv:1505.03007] 10.1103/PhysRevD.92.125026

175. "Hot Entanglement"? -- A Nonequilibrium Quantum Field Theory Scrutiny J. T. Hsiang and B. L. Hu, Phys. Lett. B **750**, 396 (2015)
[arXiv:1506.02941] 10.1016/j.physletb.2015.09.047

176. Quantum Entanglement at High Temperatures? -- Bosonic Systems in Nonequilibrium Steady State J. T. Hsiang and B. L. Hu, JHEP 11 (2015) 090
[arXiv:1503.03587] 10.1007/JHEP11(2015)090

177. Entanglement Dynamics of Detectors in an Einstein Cylinder
S. Y. Lin, C. H. Chou and B. L. Hu, JHEP 03 (2016) 047 [arXiv:1508.06221]
10.1007/JHEP03(2016)047

178. Probing a Gravitational Cat State: Experimental Possibilities
M. Derakhshani, Charis Anastopoulos and B. L. Hu, Third International Conference on Emergent Quantum Mechanics, EmQM2015 Technical University,

Vienna, October 23-25, 2015 J. Phys.: Conf. Ser. 701 012015 (2016) [arXiv:1603.04430]

179. Conformally-related Einstein-Langevin equations for metric fluctuations in stochastic gravity Seema Satin, H. T. Cho and Bei Lok Hu, Phys. Rev. D94, 064019 (2016) arXiv:1603.06206 10.1103/PhysRevD.94.064019

180. Fractal Spacetimes in Stochastic Gravity? Views from Anomalous Diffusion and the Correlation Hierarchy
Invited talk at DICE 2016: Eighth International Workshop on Spacetime - Matter - Quantum Mechanics, Castello Pasquini/Castiglioncello (Tuscany), Italy, September 12-16, 2016. J. Phys.: Conf. Series (2017) arXiv:1702.08145

---

181. Equivalence Principle for Quantum Systems: Dephasing and Phase Shift of Free-Falling Particles C. Anastopoulos and Bei Lok Hu, Class. Quant. Gravity **35**, 035011 (2018) arXiv:1707.04526 10.1088/1361-6382/aaa0e8

---

182. Quantum Thermodynamics from the Nonequilibrium Dynamics of Open Systems: I. Energy, Heat Capacity and the Third Law
J T Hsiang, C. H. Chou, Y. Subasi and B. L. Hu, Phys. Rev. E 97, 012135 (2018) [arXiv:1703.04970] 10.1103/PhysRevE.97.012135

183. Quantum Thermodynamics at Strong Coupling: Operator Thermodynamic Functions and Relations
J. T. Hsiang and B. L. Hu, *Entropy* **20**, 423 (2018) [arXiv:1710.03882] 10.3390/e20060423

Submitted for Publication:

In Preparation:

Fluctuation-Dissipation and Correlation-Propagation Relations in Detector-Quantum Field Systems
J T Hsiang, B. L. Hu and Shih-Yuin Lin, Phys. Rev. D

Correlation-Propagation Relation between two Uniformly-Accelerated Detectors in a Quantum Field
J T Hsiang, B. L. Hu, Shih-Yuin Lin and K. Yamamoto, Phys. Rev. D

Weyl-Weyl Correlators in Robertson-Walker Spacetimes
Seema Satin, H. T. Cho and B. L. Hu for Phys. Rev. D

Thermodynamic Functions and Relations for Nonequilibrium Open Quantum Systems J. T. Hsiang and B. L. Hu

Quantum Thermodynamics from the Nonequilibrium Dynamics of Open Systems: II. Entropy, Entanglement and the Second Law
J T Hsiang and B. L. Hu

Spontaneous Excitation of an Atom/Detector in Free Space: Strong Coupling and non-Markovian Effects J. T. Hsiang and B. L. Hu

Nonequilibrium Atom-Field-Medium Interaction I. Graded Influence Actions, Boundary and Material Effects on Spontaneous Excitation
J. T. Hsiang and B. L. Hu

Nonequilibrium Atom-Field-Medium Interaction II. Boundary and Material Effects on Quantum Decoherence and Entanglement
J. T. Hsiang and B. L. Hu

***Preprints**:* (Unpublished)

Stochastic Theory of Relativistic Particles Moving in a Quantum Field: I. Influence Functional and Langevin Equation
Philip R. Johnson, B.L. Hu [arXiv:quant-ph/0012137 pdf, ps, other]

Bose-Novae as Squeezing of the Vacuum by Condensate Dynamics
Esteban Calzetta and B. L. Hu [cond-mat/0208569]

Thermalization of an Interacting Quantum Field in the CTP-2PI Next-to-leading-order Large N Scheme E. Calzetta, B. L. Hu [hep-ph/0205271]

Gauge-Invariant Effective Action for the Dynamics of Bose-Einstein Condensates with a fixed number of atoms
E. Calzetta and B. L. Hu, [cond-mat/0508240]

Quantum Entanglement under Non-Markovian Dynamics of Two Qubits Interacting with a Common Electromagnetic Field,
C. Anastopoulos, S. Shresta and B. L. Hu, arXiv:quant-ph/0610007

Exact analytical Solutions to Master Equations of Quantum Brownian Motion in a General Environment with External Force
C. H. Fleming, B. L. Hu and A. Roura [arXiv: 0705.2766]

New analytical methods for gravitational radiation and reaction in binaries with arbitrary mass ratio and relative velocity
Invited talk at IARD Conference, Aristotle University, Thessaloniki, Greece, 22-26 June 2008. C. R. Galley and B. L. Hu [arXiv:0906.0968]

Protecting and Dynamically Generating Entanglement in a Two-Atom Two-Field-Mode Model K. Sinha, N. Cummings and B. L. Hu, arXiv:1004.1834

Quantum Brownian motion of multipartite systems and their entanglement dynamics C. H. Fleming, Albert Roura, B. L. Hu, [arXiv:1106.5752]

Autangle: A case of Quantum Narcissism?
Rong Zhou, R. Behunin, S. Y. Lin and B. L. Hu **arXiv:1201.0541**

Quantum Teleportation between Moving Dectectors in a Quantum Field Shih-Yuin Lin, Kazutomu Shiokawa, C. H. Chou and B. L. Hu, [arXiv:1204.1525]

Newton-Schrödinger Equations are not derivable from General Relativity + Quantum Field Theory C. Anastopoulos and B. L. Hu [arXiv:1402.3813] Comments on H. Yang et al, Phys. Rev. Lett. 110, 170401 (2013)

Comment on "A Spin Entanglement Witness for Quantum Gravity" and on "Gravitationally Induced Entanglement between Two Massive Particles is Sufficient Evidence of Quantum Effects in Gravity?
C. Anastopoulos and B. L. Hu [arXiv:1804.11315]

Infrared Behavior of Quantum Fields in Inflationary Cosmology -- Issues and Approaches: an Overview. A chapter in the forthcoming book "Semiclassical and Stochastic Gravity -- Quantum Field Effects on Curved Spacetime by Bei-Lok B. Hu and Enric Verdaguer, Cambridge University Press 2019. arXiv:1812.11851

B. Papers Presented at Scientific Meetings:

1. Invited Papers

1. "QUANTUM FIELD THEORIES AND RELATIVISTIC COSMOLOGY Plenary talk given at the 2nd Marcel Grossmann Meeting on *Developments in General Relativity,* Trieste, Italy, July, 1979. Published in the Proceeding edited by R. Ruffini (North-Holland Publishing Co., Amsterdam, 1982).

---

2. "ELEMENTARY PARTICLE PHYSICS AND COSMOLOGY" Plenary talk given at Guangzhou Conference on Particle Physics, January

1980, Conghua, China. Published in the Proceedings edited by Hu Ning (Science Press, Beijing, China, 1980).

3. "EFFECT OF FINITE TEMPERATURE QUANTUM FIELDS IN THE EARLY UNIVERSE" Invited talk at the Workshop on the Interaction of Particle Physics and Astrophysics, May 1981, Santa Barbara.

4. "SYMMETRY BEHAVIOR AT FINITE TEMPERATURE IN DYNAMIC SPACETIMES Invited talk given at the Nuffield Workshop on the Very Early Universe, Cambridge, England, July 1982. Published in "The Very Early Universe", edited by G. W. Gibbons, S. W. Hawking and S. Siklos (Cambridge University Press, Cambridge, 1983).

5. "FINITE TEMPERATURE QUANTUM PROCESSES IN THE EARLY UNIVERSE" Invited talk given at the 3rd Marcel Grossmann Meeting on Recent Developments in General Relativity, August 1982, Shanghai, China. Proceedings edited by Hu Ning (Science Press, Beijing, 1983).

6. "ON THE DISSIPATIVE NATURE OF QUANTUM GRAVITATIONAL PROCESSES"
Invited talk given at the Second New Orleans Conference on Quantum Theory and Gravitation, May l983, New Orleans.

7. "SPACETIME DYNAMICS AND FINITE TEMPERATURE EFFECTS ON SYMMETRY RESTORATION"
Invited talk at the Workshop on the Early Universe at the 10th International Conference on General Relativity and Gravitation, Padova, July 1983. Proceedings edited by B. Bertotti, F. deFelice and A. Pascolini.

8. "QUASI-LOCAL EFFECTIVE LAGRANGIAN IN CURVED SPACETIME"
Invited talk given at the Induced Gravity Workshop, Oct. 1983, Erice, Italy.

9. "NOTES ON COSMOLOGICAL PHASE TRANSITIONS"
Invited talk at the Inner Space/Outer Space Conference, Fermi Lab, May 1984. Published in the Proceedings edited by E. Kolb et al (University of Chicago Press, Chicago, 1986). pp 479-483.

10. "CAN QUANTUM GRAVITATIONAL EFFECTS PREVENT INFLATION?"
Invited talk given at the International Workshop on Gauge Theory, Gravitation and the Early Universe, Nov. 1984, Ahmedabad, India, and at the Raman Institute of Physics, Bangalore, India.

11. "QUANTUM GEOMETRIC EFFECTS AND INFLATIONARY COSMOLOGY"

Invited talk given at the Workshop on "Classical and Quantum Gravity" May 1985, Syracuse, New York.

12. "GEOMETRIC EFFECTS IN COSMOLOGICAL PHASE TRANSITION" Invited talk given at the "Particle and the Universe" International Symposium, Thessaloniki, Greece, June 1985. Proceedings edited by G. Lazarides and Q. Shafi, (Elsevier Science Publishing Co., N.Y. l986).

13. "PHASE TRANSITIONS IN THE EARLY UNIVERSE: Geometric Effects" Plenary talk given at the 4th Marcel Grossmann Meeting on Recent Developments in General Relativity, Rome, Italy, June 1985. Published in Proceedings edited by R. Ruffini (North-Holland Publishing Co., Amsterdam, 1986).

14. "WIGNER FUNCTION AND QUANTUM LIOUVILLE EQUATION IN CURVED SPACETIME" E. Calzetta and B. L. Hu. Invited talk given at the First International Conference on the Physics of Phase Space, College Park, Maryland, May 1986. Proceedings edited by Y. S. Kim and W. W. Zachary, (Springer-Verlag, Berlin 1986)

15. "THE EARLY UNIVERSE AND PARTICLE PHYSICS". Invited talk at the New York State American Physical Society Meeting on Cosmology and Particle Physics, Oct. 1986, Syracuse.

16. "DYNAMICAL FINITE SIZE EFFECT, INFLATIONARY COSMOLOGY AND THERMAL PARTICLE PRODUCTION" Invited talk given at the CAP-NSERC Summer Institute in Theoretical Physics, Edmonton, Canada, July 1987. Proceedings edited by K. Khanna, G. Kunstatter and H. Umezawa (World Scientific Publishing Co., Singapore, 1988).

17. "QUANTUM THEORIES OF THE EARLY UNIVERSE: A Critical Appraisal" Invited talk given at the International Conference on Gravitation and Cosmology, Dec. 1987. Goa, India. Proceedings edited by B. Iyer and C. V. Vishveshwara (Cambridge University Press , Cambridge 1989).

18. "COSMOLOGY AS `CONDENSED MATTER' PHYSICS" Invited talk given at the Third Asia-Pacific Physics Conference, Hong Kong, June 1988. Proceedings edited by K. Young (World Scientific Publishing Co., Singapore, 1989). arXiv:gr-qc/9511076

19. "THE ROLE OF GRAVITY IN QUANTUM PROCESSES IN CURVED SPACE" Invited talk given at the Fifth Marcel Grossmann Meeting, Perth, Australia, August 1988. Proceedings edited by D. Blair and M. J. Buckingham (World Scientific Publishing Co., Singapore, 1989).

20. "ON THE NATURE OF DISSIPATION IN SEMI-CLASSICAL GRAVITATIONAL THEORIES"
Invited talk given at the Workshop on Thermal Fields and Applications, Cleveland, October 1988. Proceedings in Physica A158 (1989).

21. "QUANTUM EFFECTS OF SUPERSPACE COSMOLOGY"
Invited lectures at the 11th Course of the International School on Cosmology and Gravitation, Erice, Italy, May 1989. Published in Quantum Mechanics in Curved Space-Time, edited by J. Audretsch and V. de Sabbata (Plenum, London 1990).

22. "COARSE-GRAINED EFFECTIVE ACTION AND INFLATIONARY COSMOLOGY" B. L. Hu and Yuhong Zhang
Invited talk at the Quantum Field Theory in Curved Space-Time Workshop in GR12, Boulder, Colorado, July 1989.

23. "MINISUPERSPACE COSMOLOGY AS THE INFRARED LIMIT OF QUANTUM GRAVITY" B. L. Hu and Sukanya Sinha
Invited talk at the Quantum Field Theory in Curved Space-Time Workshop in GR12, Boulder, Colorado, July 1989.

24. "STATISTICAL MECHANICS AND QUANTUM COSMOLOGY"
Invited talk given at the 2nd International Workshop on Thermal Fields and Applications, Tsukuba, Japan, July, 1990. Proceedings appeared as Thermal Field Theories, edited by T. Ezawa et al (North-Holland, Amsterdam 1991). gr-qc/9511079.

25. "COARSE-GRAINING AND BACKREACTION IN INFLATIONARY AND MINISUPERSPACE COSMOLOGY,"
Invited Lectures at the Seventh International Latin-American Symposium on General Relativity (SILARG VII). Proceeding appeared as Relativity and Gravitation: Classical and Quantum, edited by J. D'Olivio et al (World Scientific, Singapore, 1991).

26. "FLUCTUATION, DISSIPATION AND IRREVERSIBILITY IN COSMOLOGY" Invited Talk at the Workshop on The Physical Origin of Time-Asymmetry, Huelva, Spain, Oct. 1991. Proceedings edited by J. J. Halliwell, J. Perez-Mercader and W. H. Zurek (Cambridge University, Cambridge, 1994). gr-qc/9302021.

27. "QUANTUM ORIGIN OF NOISE AND FLUCTUATION IN COSMOLOGY"
Invited Talk at the International Conference on the Origin of Structure in the Universe, Chateau de Pont d'Oye, Belgium April, 1992.Proceedings edited by E. Gunzig, P. Nardone (NATO ASI Series, Kluwer, Dordrecht, 1993) gr-qc/9512049.

28. "QUANTUM AND THERMAL FLUCTUATIONS, UNCERTAINTY PRINCIPLE, DECOHERENCE AND CLASSICALITY"
Invited Talk at the Third International Workshop on Quantum Nonintegrability, Drexel University, Philadelphia, May, 1992. Published in "Quantum Dynamics of Chaotic Systems," edited by J. M. Yuan, D. H. Feng and G. M. Zaslavsky (Gordon and Breach, Philadelphia, 1993) gr-qc/9302029.

29. "QUANTUM NOISE IN GRAVITATION AND COSMOLOGY"
Invited Talk at the Workshop on Fluctuation and Order, Los Alamos National Laboratory, Sept. 1993. Proceedings published in the Santa Fe Institute Series, ed. M. Millonas (Springer-Verlag, Berlin, 1994) astro-ph/9312012.

30. "QUANTUM STATISTICAL FIELD THEORY IN GRAVITATION AND COSMOLOGY"
Invited Lectures at the Third International Workshop on Thermal Fields and Applications, Banff, Canada, Aug. 1993. Proceedings ed. R. Kobe, G. Kunstatter (World Scientific, 1994) gr-qc/9403061.

31. "NONEQUILIBRIUM QUANTUM FIELDS IN COSMOLOGY: Comments on Current Selected Topics"
Invited Talk at the Second Paris Cosmology Colloquium Observatorie de Paris, Paris, June 2-4, 1994. Proceedings edited by H. de Vega and N. Sanchez (World Scientific, Singapore, 1995) gr-qc/9409053.

32. "CORRELATIONS, DECOHERENCE, DISSIPATION AND NOISE IN QUANTUM FIELD THEORY"
E. Calzetta and B. L. Hu, Invited Talk at the International Workshop on Heat Kernel Techniques and Quantum Gravity, University of Winnipeg, Canada, August 1994. Proceedings published as Discourses in the Mathematics and Its Applications No. 4, edited by S. A. Fulling (Texas A & M University Press, College Station, 1995) hep-th/9501040.

33. "ENVIRONMENT-INDUCED EFFECTS IN QUANTUM CHAOS: DECOHERENCE, DELOCALIZATION AND IRREVERSIBILITY"
K. Shiokawa and B. L. Hu
Invited Talk at the International Symposium on Quantum Classical Correspondence, Drexel University, Philadelphia, Sept. 1994, Proceedings eds D. H. Feng and B. L. Hu (International Press, Boston, 1997).

34. "SEMICLASSICAL GRAVITY AND MESOSCOPIC PHYSICS"
Invited Talk at the International Symposium on Quantum Classical Correspondence, Drexel University, Philadelphia, Sept. 1994, Proceedings eds D. H. Feng and B. L. Hu (International Publishers, Boston, 1997) g-qc/9511077.

35. "HAWKING-UNRUH EFFECT AS RELATIVISTIC EXPONENTIAL SCALING OF QUANTUM NOISE"
Invited talk at the 4th International Workshop on Thermal Field Theory and Applications, Dalian, China, August 1995, Proceedings edited by Y. X. Gui and F. C. Khanna (World Scientific, Singapore, 1996) gr-qc/9606973

36. "CORRELATION DYNAMICS OF QUANTUM FIELDS AND BLACK HOLE INFORMATION PARADOX"
Invited talk at the International School of Astro-fundamental Physics, Sept. 1995. Peoceedings edited by N. Sanchez and Zichichi, Physics, Sept. 1995. (Kluwer Publishers, Dordrecht, 1996) gr-qc/9511075

37. "GENERAL RELATIVITY AS GEOMETRO-HYDRODYNAMICS"
Invited talk at the Second Sakharov International Conference Lebedev Physical Institute, May, 1996. Proceedings to appear (World Scientific, Singapore, 1997) gr-qc/9607070.

38. "NONEQULIBRIUM PHASE TRANSITIONS IN THE EARLY UNIVERSE"
Invited talk at the International Workshop on Nonequilibrium Phase Transitions July 1996, Santa Fe, New Mexico

39. "QUANTUM STATISTICAL FIELDS IN GRAVITATION AND COSMOLOGY
Invited Talk at the International Conference on Gravitation and Cosmology June 1997, Soo Chow University, Taiwan

40. "COHERENCE AND FLUCTUATIONS IN THE INTERACTION BETWEEN A MOVING ATOM AND A QUANTUM FIELD"
B. L. Hu and Alpan Raval, Invited talk at the International Symposium on Macroscopic Quantum Coherence, Northeastern University, Boston, July 1997 (World Scientific, Singapore, 1998) quant-phys/9710061.

41. "FINITE-SIZE COSMOLOGY"
Invited Talk at the International Workshop on Topology and Cosmology, Case Western University, Cleveland, Oct. 1997

42. "BLACK HOLE FLUCTUATIONS AND BACKREACTION"
B. L. Hu, Invited talk at the International Conference on quantum Gravity in the Southern Cone, Barioloche, Argentina, January 1998.

43. "STOCHASTIC GRAVITY"
B. L. Hu, Invited talk at the Third Peyresq Meeting on Quantum Cosmology, Peyresq, France, June 1998.

44. "NON-EQUILIBRIUM DYNAMICS OF A THERMAL PLASMA IN A GRAVITATIONAL FIELD

Invited Talk at the International Workshop on Non-equilibrium Quantum Fields in Relativistic Heavy Ion Physics, Brookhaven National Laboratory, L. I., Oct. 1998.

45. "NONEQUILIBRIUM QUANTUM FIELDS IN BLACK HOLES AND THE EARLY UNIVERSE"
Invited Talk at the International Workshop on Nonequilibrium Quantum Fields, Institute for Theoretical Physics, University of California, Santa Barbara, Jan 1999.

46. "RENORMALIZATION GROUP THEORY IN CURVED SPACETIMES AND COSMOLOGY: Scaling, Coarse-Graining and Backreaction"
Invited Talk at the International Conference on Renormalization Group Theory —RG2000 Taxco, Mexico, Jan. 1999

47. "FLUCTUATIONS OF VACUUM ENERGY IN BLACK HOLE SPACETIMES" Invited Talk at the Fourth Peyresq Meeting on Quantum Cosmology, Peyresq, France, June 1999

48. "NOISE FROM QUANTUM FIELD THEORY" Invited talk at the Workshop on Quantum Field theory of Nonequilibrium Processes at the Institute for Nuclear Theory , University of Washington, Seattle. Nov. 1999

49. "FLUCTUATIONS OF VACUUM ENERGY AND VALIDITY OF SEMICLASSICAL GRAVITY"
Invited Talk at the Fifth Peyresq Meeting on Quantum Cosmology Peyresq, France, June 2000

50. **Is there emitted radiation in Unruh effect?**
B.L. Hu, Alpan Raval, Invited Talk at the Capri Workshop on Quantum Aspects of Beam Physics, Oct. 2000 . Proceedings edited by Pisin Chen.(World-Scientific, Singapore, 2001) quant-ph/0012134

51. **Beyond Unruh Effect: Nonequilibrium Quantum Dynamics of Moving Charges** B.L. Hu, Philip R. Johnson, Invited Talk at the Capri Workshop on Quantum Aspects of Beam Physics, Oct. 2000. Proceedings edited by Pisin Chen. (World-Scientific, Singapore, 2001) [quant-ph/0012132]

52. "**Worldline Influence Functional: Abraham-Lorentz-Dirac-Langevin Equation from QED**" Philip R. Johnson, B.L. Hu , in Proceedings of the Capri Workshop on Quantum Aspects of Beam Physics, Oct. 2000. Edited by Pisin Chen (World-Scientific, Singapore, 2001) [quant-ph/0012135]

53. **Recent Advances in Stochastic Gravity: Theory and Issues** B. L. Hu and E. Verdaguer , Invited Lectures at Erice School, May 2001, in *Advances in the Interplay between Quantum and Gravity Physics* edited by P. Bergmann and V. De Sabbata, (Kluwer, 2002) [gr-qc/0110092]

54. **"Vacuum Energy Fluctuations in Minkowski and Casimir Spaces"** Invited Talk at the Sixth Peyresq Meeting: Stochastic Gravity and Quantum Cosmology, Peyresq, France, June 2001

55. "**Decoherence in Two Level Systems and Brownian Motion**" Invited Talk at the Workshop Mechanisms for Decoherence-Theory and Applications to Nanotechnology and Quantum Information Science held at IC2, University of Texas, Austin October 2001. Proceedings published in *Chaos, Solitons and Fractals*, (2003)

56. **"Teacup Cosmology –Particle Creation and Structure Formation in the Early Universe from BEC Collapse "** Invited Talk at the Seventh Peyresq Meeting, Peyresq, France, June 2002

57. **Quantum Noise and Fluctuations in Gravitation and Cosmology** B. L. Hu, Albert Roura, Sukanya Sinha, E. Verdaguer Invited Talk given by BLH at the *First International Symposium on Fluctuations and Noise* Sponsored by SPIE, 1-4 June 2003, Santa Fe, New Mexico. Paper number 5111-46. [gr-qc/0304057]

58. **What can we learn from BEC about Quantum Gravity?** Invited Talk at the Eighth Peyresq Meeting, Peyresq, France, June 2003

59. **Moving Charges, Detectors and Mirrors in a Quantum Field with Backreaction** Chad Galley, B. L. Hu and Philip R. Johnson in Proceedings of the Third International Symposium on Quantum Field Theory under the influence of External Conditions, Oklahoma City, Sept. 2003, edited by Kimball Milton (Rinton Press, 2004) [quant-ph/0402002]

60. "**Stochastic Theory of Relativistic Charges and Atoms in a Quantum Field**", IARD conference, Saas Fee, Switzerland, June 2004. Proceedings published in Foundations of Physics (2005)

61. "**Black Hole Backreaction – difference between the Bekenstein Model and Stochastic Gravity Predictions**" Invited Talk at the Nineth Peyresq Meeting, Peyresq, France, June 2004

62. "**Black Hole Backreaction in the Moving Mirror Analog"**, with Chad Galley, Invited Talk at the Nineth Peyresq Meeting, Peyresq, France, June 2004

63. "**Stochastic Gravity: From Macro to Micro Structures of Spacetime"** invited talk at the DICE04 meeting, Piombino, Italy, September 2004

64. "**The Universe as an Ultimate Macroscopic Quantum Phenomenon**" invited talk at the *Quantum Physics of Nature* (QUPON) Conference, Vienna, Austria, May 2005.

65. "**Black hole fluctuations and dynamics from back-reaction of Hawking radiation: Current work and further studies based on stochastic gravity**" **B. L. Hu, Albert Roura,** Invited talk at the VII Asia-Pacific International Conference on Gravitation and Astrophysics – On the Occasion of the 90th anniversary of the publication of the Theory of General Relativity, National Central University, Taiwan. Nov. 2005 *Proceedings edited by J. M. Nester, C-M Chen and J-P Hsu (World Scientific Singapore, 2006)* p. 236

66. **Uniformly Accelerated Detectors in (3+1) D spacetime: From Vacuum Fluctuations to Radiation Flux**. S. Y. Lin and B. L. Hu, Invited talk delivered by S Y Lin at the VII Asia-Pacific International Conference on Gravitation and Astrophysics – On the Occasion of the 90th Year of General Relativity, National Central University, Taiwan. Nov. 2005 *Proceedings edited by J. M. Nester, C-M Chen and J-P Hsu (World Scientific Singapore, 2006)* p.191

67. **"Stochastic Gross-Pitaevsky Equation from Coarse-Grained Effective Action",** in International Conference on **Nonlinear Science**, Hong Kong Baptist University
May 24-26, 2006 Publication A119

68. ***"*Quantum Decoherence and Entanglement between two qubits in a common electromagnetic field"** in ***Conference on Quantum Entanglement & Geometry***,
Toruń University, Poland, June 4-7, 2006

69. **"Nonequlibrium Dynamics of cold atoms in an optical lattices".**
Jagiellonian University, Krakow, Poland. June 12-13, 2006

70. **"Intrinsic and Fundamental Decoherence"**, 11th Peyresq Workshop on ***"Macro and Micro Structures of Spacetime III"***, Peyresq, France, June 17-23, 2006 Publication A121

71. **"Exact Master Equation and Decoherence of Two Harmonic Oscillators Brownian Motion in a General Environment"**
Workshop on ***Quantum - Classical Transition and Quantum Information,*** June 18-30, 2006 Benasque, Spain

72. **"Decoherence in Quantum Gravity: Issues and Critiques"**
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. Publication A120

(5 yrs in between, details of invited talks omitted …)

100. Gravity and Thermodynamics: What do we really want? ESF International Exploratory Workshop on "Gravity as Thermodynamics: Towards the microscopic origin of geometry" SISSA/ISAS, Trieste, Italy. Sept 5-8, 2011.

101. Vienna Nov 2011
102 HKUST Feb 2012, 103. Peking University (2 talks) March 2012
104. Lanzhou University (2 talks) May 2012
105. Brazilian Physical Society Plenary Talk, May 2012
106. kTlog 2, Cuena Spain, May 2012
107. Ginzburg Conference, Moscow, June 1, 2012
108. ITP, Beijing, June 4, 2012
109. Peyresq Meeting, *Fluctuation Theorem for Gravitating Systems*, France June 21, '12
110. Entanglement Decoherence & Quantum Control Workshop, Shanghai, June 12,2012
…
2014 Invited talk at DICE: *Quantum Information in the Face of Gravitation: What is the right theory to use?*
….-- Stopped enumerating.

C. Books or contributions to edited Books:

Books Published

"DIRECTIONS IN GENERAL RELATIVITY" Volume 1-- Misner Festschrift edited by B. L. Hu, M. P. Ryan, and C. V. Vishveshwara (Cambridge University Press, Cambridge, 1993).

"DIRECTIONS IN GENERAL RELATIVITY" Volume 2-- Brill Festschrift edited by B. L. Hu and T. A. Jacobson (Cambridge University Press, Cambridge, 1993).

"QUANTUM CLASSICAL CORRESPONDENCE"
edited by D. H. Feng and B. L. Hu (International Press, Boston, 1997).

"NONEQUILIBRIUM QUANTUM FIELD THEORY"

E. Calzetta and B. L. Hu (Cambridge University Press, Cambridge, 2008).

Books contracted:

"SEMICLASSICAL and STOCHASTIC GRAVITY -- Quantum Field Effects on Curved Spacetimes" B. L. Hu and E. Verdaguer (Cambridge University Press, Cambridge, 2018)

Invited Contributions (in addition to items in proceedings of conferences listed above)

1. "VACUUM VISCOSITY AND ENTROPY GENERATION IN QUANTUM GRAVITATIONAL PROCESSES IN THE EARLY UNIVERSE" in Advanced Series in Astrophysics, Vol. l edited by L. Z. Fang and R. Ruffini (World Scientific ,Singapore, 1983).

2. "MINISUPERSPACE AS A QUANTUM OPEN SYSTEM" B. L. Hu, J. P. Paz and S. Sinha in Misner Festschrift (1993) pp. 145-165.

3. "DECOHERENCE OF CORRELATON HISTORIES" E. Calzetta and B. L. Hu in Brill Festschrift (1993) pp. 38-65.

4. "FLUCTUATION, DISSIPATION AND IRREVERSIBILITY IN COSMOLOGY" in The Physical Origin of Time-Asymmetry, edited by J. J. Halliwell, J. Perez- Mercader and W. H. Zurek (Cambridge University, Cambridge, 1994). [gr-qc/9302021]

5. "NOTES ON BLACK HOLE FLUCTUATIONS AND BACKREACTION B. L. Hu, A. Raval, and S. Sinha in "Black Holes, Gravitational Radiation and The Universe: Essays in honor of C. V. Vishveshwara", eds B. Iyer and B. Bhawal (Kluwer Academic Publishers, Dordrecht, 1998.) gr-qc/9901010

6. "Quantum Gravity and the Origin of the Universe – an Ephemeralist's view" in *Why are we here? -- on the Origin of the Universe* (Book in Chinese) (Commercial Press, Hong Kong 2007) -- A collection of essays based on public talks given by Stephen Hawking, Bei-Lok Hu, Robert Laughlin, Henry Tye and others in Hong Kong, May-June 2006 [gr-qc/0611058]

7. New View on Quantum Gravity: Micro-Structure of Spacetime and Origin of the Universe (English version of 6) collected in PHYSICS OF SELF- OR: GANIZATION SYSTEMS Proceedings of the 5th 21st Century COE Symposium held in Wasada University, *Tokyo, Japan 13 - 14 September 2007,* edited by Shin'ichi Ishiwata & Yasushi Matsunaga. (World Scientific Press 2008).

8. Invited Guest Editor, with Ting Yu, co-editor, for the Special Issue on Quantum Decoherence and Quantum Entanglement in *Quantum Information Processing* (December 2009)

9. 胡悲乐：“衍生引力 / 量子引力： 宏观 / 微观时空理论” 现代物理知识》杂志纪念广义相对论创立 100 周年 专刊 第 27 卷第 5 期 (总 161 期) 第 55- 62 页。