Curriculum Vitae

Dipankar Home

Bose Institute, Kolkata

(Research Institute of Govt. of India, Department of Science and Technology)

Date of Birth

11 November, 1955

Contact Details

Bose Institute
Centre for Astroparticle Physics
and Space Science
EN Block, Sector – V
Salt Lake
Kolkata – 700 091
India
Phone: 91-33-2569 3105/3115
FAX: 91-33-2569 3127
E-mail: - quantumhome80@gmail.com
Homepage: www.dipankarhome.com

Field of Specialization

Foundations of Quantum Mechanics and Quantum Information

Present Position

Ex-Senior Professor, Department of Physics, Bose Institute, Kolkata

Awards/Distinctions Received

- Elected Fellow of the National Academy of Sciences, India, 2011
- Awarded Jawaharlal Nehru Fellowship, 2002
- Awarded B. M. Birla Science Prize, 1995
- Awarded Homi Bhabha Fellowship, 1993
- Awarded Associateship of the Indian Academy of Sciences, 1987
- Awarded the Indian National Science Academy Medal for Young Scientists, 1986

Books

Research-level Books

(a) Authored a book, titled "***Conceptual Foundations of Quantum Physics - An Overview from Modern Perspectives***" (Plenum, New York, 1997). *Foreword* by the Nobel laureate Anthony Leggett (This book was written with the support of *Homi Bhabha Fellowship*).

Appreciative reviews of this book appeared in *Physics Today* (October, 1998), *The Times (London) Higher Education Supplement* (25 September, 1998), *Progress in Quantum Electronics* Vol.22, pp.41-42 (1998); and *Foundations of Physics*, Vol. 31, pp. 855-857 (2001). The reviews were written by some of the leading experts in this area, viz. James Cushing, Alastair Rae, Peter Landsberg and Daniel Greenberger respectively.

(b) Co-authored a book, titled "***Einstein's Struggles with Quantum Theory: A Reappraisal***", with Andrew Whitaker (Springer, New York, 2007). *Foreword* by Roger Penrose (This book was written with the support of *Jawaharlal Nehru Fellowship*).

Appreciative reviews of this book appeared in *Physics Today* (May, 2008) and *Journal of American Mathematical Society: MathSciNet* (2008).

A Brief Summary of the Most Significant Research Contributions

Dipankar Home is one of the early Indian researchers to have initiated investigations on *Foundational issues of Quantum Mechanics* since 1980s and was the first Indian researcher to have done his Ph. D. work on this topic. This line of study has gradually evolved to become amenable to a variety of fundamentally important experiments, as well as has become intimately related to the currently one of the frontier areas of science, viz. *Quantum Information*

Theory and its applications in *Quantum Communication*, *Quantum Cryptography and Quantum Computation*.

Among his ***137*** Research Publications with his various collaborators that have been cited in *20* books, the *most significant works* are as follows:

A) At the core of the various intriguing questions raised by Einstein, Schrödinger and others about foundational aspects of Quantum Mechanics (QM) is the QM incompatibility with the everyday notion of *Macrorealism* (MR) which assumes that, at any instant, a system is in a definite state having definite properties, irrespective of any measurement. The latest work by Home and his collaborators [**Physical Review Letters** 120, 210402 (2018)] opens up a novel direction for extending the tests of MR as well as of the *nonclassicality* of QM for massive systems much beyond those possible by other methods.

In particular, using the Leggett-Garg inequality, the work by Home and his collaborators shows that the QM violation of MR for large mass systems is *testable* for a system like harmonic oscillator which has a well defined classical description and is initially in a state which is the most classical-like of all quantum states, viz. the harmonic oscillator coherent state. Testing of this scheme using the setup proposed in this work for optically trapped and oscillating nano-scale objects of mass about million to billion times heavier than hydrogen atoms is being implemented by Hendrik Ulbricht and his group at University of Southampton, UK.

B) A hitherto unexplored connection was revealed between two profound features of QM, viz. *Quantum Indistinguishability* (QI) and *Quantum Entanglement* (QE) by invoking QI for formulating an *arbitrarily efficient generic scheme* that can *entangle*, using any spin-like variable, any two identical bosons/fermions coming from independent sources [**Physical Review Letters** 88, 050401 (2002)].

Such an efficient generic scheme for generating QE is of considerable importance since QE lies at the core of Quantum Foundations and various applications of Quantum Information Theory. Furthermore, this work suggested a novel form of complementarity between particle distinguishability and the amount of entanglement generated, besides providing one of the ingredients of the seminal work by C. W. J. Beenakker et al. [**Physical Review Letters** 93, 020501 (2004)] which initiated studies on Free-Electron Quantum Computation.

C) The above-mentioned line of study blending QI and QE was enriched by uncovering an earlier unnoticed property of QE involving any two identical particles which has been called ‘*Duality in Entanglement*’ [**Physical Review Letters** 110, 140404 (2013)]. Importantly, this property enables studying the transition from QI to Classical Distinguishability, as well as can be an effective tool for empirically probing aspects of QI for *mesoscopic/macroscopic molecules* without requiring to bring them together, thereby avoiding the effect of interaction between them.

For photons, this predicted property of '*Entanglement Duality*' (involving the manifestation of polarization entanglement when the photons are labelled by different momenta, or, for the same source, manifesting momentum entanglement when the photons are labelled by polarization variables) has been ***experimentally verified*** at Tsinghua University, Beijing [**New Journal of Physics** 16, 083011 (2014)], followed by another ***experimental study*** at INRIM, Torino [**Physical Review A** 91, 062117 (2015)] using Bell measurements in order to probe a few subtle aspects of our predicted '*Entanglement Duality*'.

D) One of the earliest ideas for testing the fundamental property of *Quantum Contextuality* was formulated by introducing the notion of *path-spin intraparticle entanglement* as applied to a *Bell-type inequality* involving the path and spin variables pertaining to a single spin-1/2 particle [**Physics Letters A** 279, 281 (2001)].

This was ***experimentally verified*** by the Neutron Interferometric group at Atominstitut, Vienna [**Nature** 425, 45 (2003)].

E) A novel manifestation of *wave-particle duality of single photon states* providing fresh insights into the Bohrian principle of wave particle complementarity was formulated by invoking the quantum mechanical treatment of *tunneling of single photon states* in the context of a double-prism device [**Physics Letters A** 153, 403 (1991); 168, 95 (1992)].

This proposal was ***experimentally realized*** at the Hamamatsu Photonics Central Research Laboratory, Japan [**Physics Letters A** 68, 1 (1992)].

F) A striking *biomolecular example* was formulated in order to empirically probe aspects of the *Quantum Measurement Problem* in the *mesoscopic domain* [**Physical Review Letters** 76, 2836 (1996)] by using the biochemical property of photolyase enzyme attachment to *uv-absorbed DNA molecules* serving as *detectors of uv photons*. This work was one of the earliest of its kind, using the biomolecular phenomenon in order to provide empirically relevant constraints on the various approaches seeking to address the much debated Quantum Measurement Problem.

G) A series of investigations concerning an intriguing Quantum Mechanical effect known as the *Quantum Zeno Effect* (inhibition of the time evolution of a system due to repeated projective measurements) throwing light on the various critical aspects of its treatment, its deep-seated conceptual implications and clarifying the question of its experimental realizability, culminated in a comprehensive and widely cited in-depth analysis [**Annals of Physics** 258, 237 (1997)] of this effect which is now well recognized as one of the key fundamental quantum features.

H) Wigner's argument seeking to demonstrate *Quantum Nonlocality* that was originally formulated only for bipartite states has been successfully *generalized* for an *arbitrary multipartite state*, thereby providing a powerful method for obtaining *multipartite Bell-type inequalities* in order to probe Quantum Nonlocality pertaining to the states of multipartite systems [**Physical Review A** *91, 012102 (2015)]*. The efficacy of such obtained multipartite Bell-type inequalities has been demonstrated for the *quadripartite entangled states*, thus opening up a novel direction in this area of study concerning multipartite Quantum Nonlocality which is of much contemporary interest.

List of 10 Best Publications

1. *Nonclassicality of the harmonic-oscillator coherent state persisting up to the macroscopic domain*; S. Bose, D. Home and S. Mal, ***Physical Review Letters*** 120, 210402 (2018)**.**

2. *Generic Entanglement Generation, Quantum Statistics, and Complementarity;* S. Bose and D. Home, ***Physical Review Letters*** *88, 050401(2002).*

3. *Duality in Entanglement Enabling a Test of Quantum Indistinguishability Unaffected by Interactions;* S. Bose and D. Home, ***Physical Review Letters*** *110, 140404 (2013).*

4. *A Conceptual Analysis of Quantum Zeno; Paradox, Measurement and Experiment*; D. Home *and* M. A. B. Whitaker, ***Annals of Physics*** 258*, 237 (1997).*

5. *DNA Molecular Cousin of Schrödinger's Cat: A Curious Example of Quantum Measurement;* D. Home and R. Chattopadhyaya, ***Physical Review Letters*** *76, 2836 (1996).*

6. *Multipartite Bell-type Inequality by Generalizing Wigner's Argument;* D. Home, D. Saha and S. Das*,* ***Physical Review A*** *91, 012102 (2015).*

7. *An Experiment to throw more Light on Light*; P. Ghose, D. Home and G. S. Agarwal, ***Physics Letters A*** 153*, 403 (1991);168, 95 (1992).*

8. *Bell's inequality for a single spin-1/2 particle and Quantum Contextuality*; S. Basu, S. Bandyopadhyay, G. Kar and D. Home, ***Physics Letters A*** 279*, 281 (2001).*

9. *Probing the Leggett-Garg inequality for oscillating neutral kaons and neutrinos;* D. Gangopadhyay, D. Home and A. Sinha Roy, ***Physical Review A*** *88, 022115 (2013).*

10. *Ensemble Interpretations of Quantum Mechanics: A Modern Perspective;* D. Home and M. A. B. Whitaker, ***Physics Reports*** *210, 223 (1992).*

Citations

Home's research works embodied in **137** peer-reviewed publications have *Total Citation Number* around **1967** (Google Scholar, June 2017). In addition, Home's **2** Research-level Books have around **229** citations. Home's **4** papers have above **100** citations which are listed below:

Sl.	***Papers***	***Citation***
1	*A Conceptual Analysis of Quantum Zeno; Paradox, Measurement and Experiment*; D. Home and M. A. B. Whitaker, ***Annals of Physics*** 258, *237 (1997).*	**196**
2	*Ensemble Interpretations of Quantum Mechanics: A Modern Perspective*; D. Home and M. A. B. Whitaker, ***Physics Reports*** 210, *223 (1992).*	**136**
3	*Bell's Theorem and the EPR Paradox*; D. Home and F. Selleri, ***Rivista del Nuovo Cimento*** 14, *9 (1991).*	**119**
4	*Generic Entanglement Generation, Quantum Statistics, and Complementarity;* S. Bose and D. Home, ***Physical Review Letters*** *88, 050401(2002).*	**107**

Further, Home's research works and books have been cited in the following **20** books:

Book	**Name of the Author / Editor**	**Year of publication**	**Publisher**	**Page No.**
1. Charged Particle Traps II: Applications	Günther Werth, Viorica N. Gheorghe, F. G. Major	2009	Springer	266
2. The Road to Reality	R. Penrose	2004	Jonathan Cape, London	1064
3. Seeking Ultimates – An Intuitive Guide to Physics	P. T. Landsberg	2000	Institute of Physics Publishing,	126, 178

			Bristol	
4. The Einstein - Podolosky - Rosen Paradox in Atomic, Nuclear and Particle Physics	A. Afriat and F. Selleri	1999	Plenum, New York	192, 193, 242
5. Quantum Dialogue: The Making of a Revolution	M. Beller	1999	University of Chicago Press, Chicago	343
6. Decoherence and Quantum Measurements	M. Namiki, S. Pascazio and H. Nakazato	1997	World Scientific, Singapore	217
7. Interpreting the Quantum World	J. Bub	1997	Cambridge University Press, Cambridge	70
8. Encyclopaedia Britannica Book of the year 1996	Edited by G. M. Edwards	1996	Encyclopaedia Britannica Inc. Chicago	242-243
9. Einstein, Bohr and Quantum Dilemma	A. Whitaker	1996	Cambridge University Press, Cambridge	211, 311, 312, 330, 335, 336
10. Bohmian Mechanics and Quantum Theory: An Appraisal	Edited by J. Cushing, A. Fine and S. Goldstein	1996	Kluwer, Dordrecht	99
11.Schroedinger’s Kittens	J. Gribbin	1995	Weidenfeld and Nicolson, London	118, 120
12.Veiled Reality: An Analysis of Present-Day Quantum Mechanical Concepts	B. d’Espagnat	1995	Addison-Wesley Massachusetts	201, 215, 297, 298, 308, 348
13. Shadows of the Mind	R. Penrose	1994	Oxford University Press, Oxford	435

14. Quantum Mechanics, Historical Contingency and the Copenhagen Hegemony	J. T. Cushing	1994	University of Chicago Press, Chicago	224, 226. 232
15. What is Reality?	G. Venkataraman	1994	Universities Press Hyderabad	82, 85-87, 90, 91
16. Quantum Theory: Concepts and Methods	A. Peres	1993	Kluwer, Dordrecht	416
17. The Quantum Theory of Motion	P. R. Holland	1993	Cambridge University Press, Cambridge	14, 249
18. Continuous Quantum Measurements and Path Integrals	M. B. Mensky	1993	Institute of Physics Publishing, Bristol	17
19. The Aharonov-Bohm Effect	M. Peshkin and A. Tonomura	1990	Springer-Verlag, Berlin	161
20.Microphysical Reality and Quantum Formalism	F. Selleri	1988	Kluwer, Dordrecht	319

A Complete List of Research Publications of Dipankar Home
(in peer-reviewed Journals and invited articles in Books)

Listed sequentially from the recent to the earlier ones, *not* in the order of significance:

1. *Nonclassicality of the harmonic-oscillator coherent state persisting up to the macroscopic domain*; S. Bose, D. Home and S. Mal, ***Physical Review Letters*** 120, 210402 (2018).

2. *Testing local-realism and macro-realism under generalized dichotomic measurements*; D. Das, S. Mal and D. Home, ***Physics Letters A*** 382, 1085 (2018).

3. *The Quantum Cheshire Cat effect: Theoretical basis and observational implications*; Q. Duprey, S. Kanjilal, U. Sinha, D. Home and A. Matzkin, ***Annals of Physics*** 391, 1 (2018).

4. *A tighter steering criterion using the Robertson-Schrödinger uncertainty relation*; S. Sasmal, T. Pramanik, D. Home and A. S. Majumdar, ***Physics Letters A*** 382, 27 (2018).

5. *Bipartite qutrit local realist inequalities and the robustness of their quantum mechanical violation*; D. Das, S. Datta, S. Goswami, A. S. Majumdar and D. Home, ***Physics Letters A*** 381, 3396 (2017).

6. *Can the use of the Leggett-Garg inequality enhance security of the BB84 protocol?*; A. Shenoy H., S. Aravinda, R. Srikanth and D. Home, ***Physics Letters A*** 381, 2478 (2017).

7. *Quantum mechanical violation of macrorealism for large spin and its robustness against coarse-grained measurements*; S. Mal, D. Das and D. Home, ***Physical Review A*** 94, 062117 (2016).

8. *Manifestation of pointer-state correlations in complex weak values of quantum observables*; S. Kanjilal, G. Muralidhara and D. Home, ***Physical Review*** *A* 94, 052110 (2016).

9. *Sharing of Nonlocality of a Single Member of an Entangled Pair of Qubits Is Not Possible by More than Two Unbiased Observers on the Other Wing*; S. Mal, A. S. Majumdar and D. Home; Special Issue "*Mathematics of Quantum Uncertainty*"- ***Mathematics*** 4, 48 (2016).

10. *Duality in Entanglement tested with Bell Measurements; I. P. Degiovanni, E. Moreva, M. Gramegna, M. Genovese, S. Bose, D. Home, and G. Brida; in Conference on Lasers and Electro-Optics,* ***OSA Technical Digest (Optical Society of America***,*) JTu5A.27 (2016).*

11. *Facets of the Leggett-Garg inequality: some recent studies*; D. Home, ***Current Science*** 109, 1980 (2015).

12. *Effect of quantum statistics on the gravitational weak equivalence principle*; S. V. Mousavi, A. S. Majumdar and D. Home, ***Classical and Quantum Gravity*** 32, 215014 (2015).

13. *Bell measurements as a witness of a dualism in entanglement;* E. Moreva, G. Brida, M. Gramegna, S. Bose, D. Home and M. Genovese, ***Physical Review A*** 91, 062117 (2015).

14. *Toward secure communication using intra-particle entanglement;* S. Adhikari, D. Home, A. S. Majumdar, A. K. Pan, A. Shenoy H. and R. Srikanth, ***Quantum Information Processing*** *14, 1451 (2015).*

15. *Wigner's form of the Leggett-Garg inequality, No-Signaling-in-time condition, and unsharp measurement*; D. Saha, S. Mal, P. K. Panigrahi and D. Home, ***Physical Review A*** 91, 032117 (2015).

16. *Multipartite Bell-type Inequality by Generalizing Wigner's Argument;* D. Home, D. Saha and S. Das, ***Physical Review A*** *91, 012102 (2015).*

17. *Unification of Bell, Leggett-Garg and Kochen-Specker inequalities: Hybrid spatio-temporal inequalities;* S. Das, S. Arvinda, R. Srikanth and D. Home, ***Europhysics Letters*** *104, 60006 (2013).*

18. *Duality in Entanglement Enabling a Test of Quantum Indistinguishability Unaffected by Interactions;* S. Bose and D. Home, ***Physical Review Letters*** *110, 140404 (2013).*

19. *Probing the Leggett-Garg inequality for oscillating neutral kaons and neutrinos;* D. Gangopadhyay, D. Home and A. Sinha Roy, ***Physical Review A*** *88, 022115 (2013).*

20. *Reexamining Larmor precession in a spin-rotator: Testable correction and its ramifications;* D. Home, A. K. Pan and A. Banerjee, ***The European Physical Journal D*** *67, 72 (2013).*

21. *Reply to Comment on 'Quantitative probing of the quantum-classical transition for the arrival time distribution';* D Home, A. K. Pan and A. Banerjee, ***Journal of Physics A: Mathematical and Theoretical*** *46, 208002 (2013).*

22. *A testable prediction of the no-signalling condition using a variant of the EPR-Bohm example;* D. Home, A. Rai and A. S. Majumdar, ***Physics Letters A*** *337, 540 (2013).*

23. *Effect of a transient barrier on wavepacket traversal;* D. Home, A. S. Majumdar and A. Matzkin, ***Journal of Physics A: Mathematical and Theoretical*** *45, 295301 (2012).*

24. *Strong quantum violation of the gravitational weak equivalence principle by a non-Gaussian wave-packet;* P. Chowdhury, D. Home, A. S. Majumdar, S. V. Mousavi, M. R. Mozaffari and S. Sinha, ***Classical and Quantum Gravity*** *29, 025010 (2012).*

25. *Quantum violation of noncontextuality for separable states using fewer measurement settings;* A. K. Pan and D. Home, ***The European Physical Journal D*** *66, 62 (2012).*

26. *Quantum teleportation using non-orthogonal entangled channels;* S. Adhikari, A. S. Majumdar, D. Home, A. K. Pan and P. Joshi, ***Physica Scripta*** *85, 045001 (2012).*

27. *Testing non-locality of single photons using cavities;* T. Pramanik, S. Adhikari, A. S. Majumdar and D. Home, ***Physics Letters A*** *376, 344 (2012).*

28. *On Empirical Scrutiny of the Bohmian Model Using a Spin Rotator and the Arrival/Transit Time Distribution;* A. K. Pan and D. Home, ***International Journal of Theoretical Physics*** *51, 374 (2012).*

29. *Leggett-type nonlocal realist inequalities without any constraint on the geometrical alignment of measurement settings;* A. Rai, D. Home and A. S. Majumdar, ***Physical Review A*** *84, 052115 (2011).*

30. *An interplay between nonlocality and quantum violation of path-spin noncontextuality;* D. Home and A. K. Pan, ***International Journal of Quantum Information*** *9, 1279 (2011).*

31. *On the Possibility of Empirically Probing the Bohmian Model in Terms of the Testability of Quantum Arrival/Transit Time Distribution*; *D. Home and* A. K. Pan, in *"**Quantum Trajectories**";* edited by P. Chattaraj (CRC Press, Taylor & Francis, 2011).

32. *Quantum mechanical effect of path-polarization contextuality for a single photon;* A. K. Pan and D. Home, ***International Journal of Theoretical Physics*** *49, 1920 (2010).*

33. *Reply to the "Comments on 'Contextuality within quantum mechanics manifested in subensemble mean values'";* D. Home and A. K. Pan, ***Physics Letters A*** *374, 2195 (2010)***.**

34. *Information transfer using a single particle path-spin hybrid entangled state;* T. Pramanik, S. Adhikari, A. S. Majumdar, D. Home, and A. K. Pan, ***Physics Letters A*** *374***,** *1121 (2010).*

35. *Swapping path-spin intraparticle entanglement onto spin-spin interparticle entanglement;* S. Adhikari, A. S. Majumdar, D. Home, and A. K. Pan, ***Europhysics Letters*** *89***,** *10005 (2010).*

36. *Contextuality within quantum mechanics manifested in subensemble mean values; D. Home and* A. K. Pan, ***Physics Letters A* 373,** 3430 (2009).

37. *Dark energy from quantum wave function collapse of dark matter;* A. S. Majumdar, D. Home, and S. Sinha, ***Physics Letters B* 679,** 167 (2009).

38. *Quantitative probing of the quantum–classical transition for the arrival time distribution*; D. Home, A. K. Pan and A. Banerjee, ***Journal of Physics A: Math. Theor*.** 42, 165302 (2009).

39. *Using the no-signaling condition for constraining the nonidealness of a Stern-Gerlach set-up*; D. Home and A. K. Pan, ***Journal of Physics A: Math. Theor.*** 42, 085301 (2009).

40. *Quantum transit time distribution, its testability and foundational implications;* D. Home and A. K. Pan, in "***Quantum Optics – Coherence, Entanglement and Nonlinear Dynamics***"; edited by J. Banerji, P. K. Panigrahi, and R. P. Singh (Macmillan India, 2008).

41. *Reply to "Comment on 'Quantum time*-*of-flight* distribution *for cold trapped atoms'"*; M. Ali, D. Home, A. S. Majumdar and A. K. Pan, ***Physical Review A*** 77, 026101 (2008).

42. *Aspects of nonideal Stern – Gerlach experiment and testable ramifications*; D. Home, A. K. Pan, M. Ali and A. S. Majumdar, ***Journal of Physics A: Mathematical and Theoretical*** 40, 13975 (2007).

43. *Quantum time of flight distribution for cold trapped* atoms; M. Ali, D. Home, A. S. Majumdar and A. K. Pan, ***Physical Review A*** 75, 042110 (2007).

44. *On the quantum analogue of Galileo's leaning tower experiment;* M. Ali, A. S. Majumdar, D. Home, and A. K. Pan, ***Classical and Quantum Gravity*** *23***,** *6493 – 6502* (2006).

45. *Quantum Superarrivals*: *Bohr's Wave-Particle Duality Revisited;* M. Ali, A. S. Majumdar, and D. Home, ***Foundations of Physics Letters*** 19, 179 (2006).

46. *Observability of the arrival time distribution using spin-rotator as quantum clock*; A. K. Pan, M. Ali and D. Home, ***Physics Letters A*** 352, *296 (2006).*

47. *Testing Quantum Statistics with Particles in Distinguishable States*; S. Bose and D. Home, ***International Journal of Quantum Information*** 3, *117 (2005)*

48. *Information Transfer and Non-locality for a Tripartite Entanglement using Dynamics*; D. Home and J. Corbett, ***Physics Letters A*** 333, *382 (2004).*

49. *Spin-dependent observable effect for Free Particles using the Arrival Time Distribution*; M. Ali, A. S. Majumdar, D. Home and S. Sengupta, ***Physical Review A*** 68, *042105 (2003).*

50. *Information Flow and Quantum Cryptography using Statistical Fluctuations*; D. Home and M. A. B. Whitaker, ***Physical Review A*** 67*, 022306 (2003)*.

51. *Generic entangling through quantum indistinguishability*; S. Bose and D. Home, ***Pramana – Journal of Physics*** 59*, 229* (2002).

52. *Violation of Bell's inequality in neutral kaons system*; M. K. Samal and D. Home, ***Pramana – Journal of Physics*** 59*, 289 (2002).*

53. *Understanding Quantum Superarrivals using the Bohmian Model*; M. Ali, A. S. Majumdar and D. Home, ***Physics Letters A*** 304*, 61 (2002)*.

54. *Quantum Information Transfer without An External Chanel*; D. Home and J. Corbett, in ***Proc. 7th Int. Symp. on Foundations of Quantum Mechanics in the Light of New Technology ISQM – Tokyo'01****; World Scientific (2002)*.

55. *Quantum Information Transfer Using A Time-Dependent Boundary Condition*; D. Home and A. S. Majumdar; in ***Proc. 7th Int. Symp. on Foundations of Quantum Mechanics in the Light of New Technology ISQM – Tokyo'01****; World Scientific (2002)*.

56. *Generic Entanglement Generation, Quantum Statistics, and Complementarity*; S. Bose and D. Home, ***Physical Review Letters*** 88*, 050401 (2002).*

57. *Quantum-Mechanical Effects in a Time-varying Reflection Barrier*; S. Bandyopadhyay, A. S. Majumdar and D. Home*,* ***Physical Review A*** 65*, 052718 (2002).*

58. *Interpreting the Measurement of the Time of Decay: Phenomenological Significance of the Bohm Model*; A. S. Majumdar and D. Home*,* ***Physics Letters A*** 296*, 176 (2002)*.

59. *Quantum superarrivals and information transfer through a time varying boundary*; D. Home and A. S. Majumdar, ***Pramana – Journal of Physics*** 59**,** 321 (2002).

60. *Bell's inequality for a single spin-1/2 particle and Quantum Contextuality*; S. Basu, S. Bandyopadhyay, G. Kar and D. Home, ***Physics Letters A*** 279*, 281 (2001).*

61. *Facets of Tripartite Entanglement, in* ***Foundations of Quantum Theory and Quantum Optics***; D. Home, ***Pramana – Journal of Physics*** 56, 179 (2001).

62. *Quantum Effects involving Interplay between Unitary Dynamics and Kinematic Entanglement*; D. Home and J. Corbett*,* ***Physical Review A*** 62*, 062103 (2000).*

63. *On the Importance of the Bohmian Approach for Interpreting CP Violation Experiments*; D. Home and A. S. Majumdar, ***Foundations of Physics*** 29*, 721 (1999).*

64. *Quantum Zeno Effect: Relevance for Local Realism, Macroscopic Realism, and Non-invasive Measurability at the Macroscopic Level*; D. Home and M.A.B. Whitaker, ***Physics Letters A*** 239, *6 (1998).*

65. *Response to "Comment on DNA Molecular Cousin of Schrödinger's Cat: A Curious Example of Quantum Measurement"*; D. Home and R. Chattopadhyaya, ***Physical Review Letters*** 80, *1349 (1998).*

66. *Comment on Why Quantum Mechanics Cannot be formulated as a Markov Process*; L. Hardy, D. Home, E. J. Squires and M. A. B. Whitaker, ***Physical Review A*** 56, *3301 (1997).*

67. *A Conceptual Analysis of Quantum Zeno; Paradox, Measurement and Experiment*; D. Home and M. A. B. Whitaker, ***Annals of Physics*** 258, *237 (1997).*

68. *Collapse-Induced Quantum Nonlocal Effect*; D. Home and G. Kar, ***Foundations of Physics*** 27, *1765 (1997).*

69. *Testing a Dynamical Model of Wavefunction Collapse in the Cosmological Scenario*; D. Home and A.S. Majumdar, in ***Quantum Coherence and Decoherence****;* edited by K. Fujikawa and Y. A. Ono *(*Elsevier, *1996).*

70. *Is Spontaneous Localization Compatible with the Energy density of the Universe?;* A. S. Majumdar and D. Home, ***Physics Letters A*** 220, *17 (1996).*

71. *The Two-Prism Experiment and Wave Particle Duality of Light*; P. Ghose and D. Home, *Invited Contribution to the Special Issue of* **Foundations of Physics** *in honour of Max Jammer* 26, *943 (1996).*

72. *Standard Quantum Mechanics with Environment-Induced Decoherence and Wavefunction Collapse*: *Possibility of an Empirical Discrimination Using Neutron Interferometry*; D. Home and S. Bose, **Physics Letters A** 217, *209 (1996).*

73. *DNA Molecular Cousin of Schrödinger's Cat: A Curious Example of Quantum Measurement;* D. Home and R. Chattopadhyaya, ***Physical Review Letters*** 76, *2836 (1996).*

74. *The inadequacy of Effective Incoherence Interpretations of Quantum Theory, as demonstrated by analysis of EPR Measurements*; D. Home and M. A. B. Whitaker, ***Physics Letters A*** 211, *5 (1996).*

75. *Incompatibility between Quantum Mechanics and Classical Realism in the Strong Macroscopic Limit*; D. Home and A. S. Majumdar, ***Physical Review A*** 52, *4959 (1995).*

76. *Quantum Nonlocality of Single Photon States*; D. Home and G. S. Agarwal, ***Physics Letters A*** 209, *1 (1995).*

77. *An Analysis of the Aharonov-Anandan-Vaidman Model*; P. Ghose and D. Home, ***Foundations of Physics*** 25, *1105 (1995).*

78. *Quantum Mechanical Interference and Indistinguishability in Nuclear Orbiting Reactions*; A. Ray and D. Home, ***Physics Letters A*** 204, *87 (1995).*

79. *On Boson Trajectories in the Bohm Model*; P. Ghose and *D. Home*, ***Physics Letters A*** 191, *362 (1994).*

80. *Position and Contextuality in Bohm's Causal Completion of Quantum Mechanics*; D. Home, ***Physics Letters A*** 190, *353 (1994).*

81. *Wave Function Collapse as a Nonlocal Quantum Effect*; D. Home and R. Nair, ***Physics Letters A*** **187**, *224 (1994).*

82. *Parameter Dependence in the EPR-Bohm Type Experiment*; D. Home and M. A. B. Whitaker, ***Physics Letters A*** 187, *227 (1994).*

83. *Simultaneously Sharp Wave and Particle-Like Property of Single Photon States in a Two-Prism Experiment*; P. Ghose and D. Home in: ***Recent Developments in Quantum Optics***, edited by R. Inguva (Springer, 1993) 43 – 46.

84. *Non-Classical Interference and Which Path Information in a Gamma Angular Correlation Experiment Using a Heavy-Ion Orbiting Reaction*; A. Ray and D. Home, ***Physics Letters A*** 178, *33 (1993).*

85. *Relativistic quantum mechanics of bosons*; P. Ghose, D. Home and M. N. Sinha Roy, ***Physics Letters A*** 183**,** *267* (1993).

86. *Comment on Computational Approach to the Quantum Zeno Effect*; D. Home and M. A. B. Whitaker, ***Physical Review A*** 48, *2502 (1993).*

87. *A New Theorem on Quantum Nonlocality*, D. Home, ***Vistas in Astronomy*** 37, *269-272 (1993).*

88. *Interrupted Fluorescence Experiments and Hidden Variables*; D. Home and M. A. B. Whitaker, ***Physics Letters A*** 181, *114 (1993).*

89. *A Unified Framework for Quantum Zeno Processes*; D. Home and M. A. B. Whitaker, ***Physics Letters A*** 173, *327 (1993).*

90. *The Aharonov-Bohm Effect from the Point of View of Local Realism*; D. Home and F. Selleri, in: ***Wave-Particle Duality,*** edited by F. Selleri *(*Plenum, New York, *1992) 127-138.*

91. *Locality and Causality in Time-Dependent Aharonov-Bohm Interference*; R. A. Brown and D. Home, ***Nuovo Cimento*** 107B, *303 (1992).*

92. *Einstein-Podolsky-Rosen Correlation – Parallelism between the Wigner Function and Local Hidden Approaches*; G. S. Agarwal, *D. Home* and W. Scleich, ***Physics Letters A*** 170, *359 (1992).*

93. *Wave-Particle Duality of Single Photon States*; P. Ghose and D. Home, *Invited Contribution to the Special Issue of* ***Foundations of Physics*** *on the birth centenary of L. de Broglie*, 22, *1435 (1992).*

94. *An Experiment to throw more Light on Light: Implications*; P. Ghose D. Home and G. S. Agarwal, ***Physics Letters A***, 168, *95 (1992).*

95. *Negative-Result Experiments and the Requirement of Wave Function Collapse*; D. Home and M. A. B. Whitaker, ***Journal of Physics A*** 25, *2387 (1992).*

96. *Realism and the Quantum Mechanical Two-State Oscillator*; L. Hardy, D. Home, E. J. Squires and M. A. B. Whitaker, ***Physical Review A*** 45, *4267 (1992).*

97. *A Critical Re-examination of the Zeno Paradox*; D. Home and M.A.B. Whitaker, ***Journal of Physics A*** 25, *657 (1992).*

98. *Ensemble Interpretations of Quantum Mechanics: A Modern Perspective*; D. Home and M. A. B. Whitaker, ***Physics Reports*** 210, *223 (1992).*

99. *Testing Wave Function Collapse and the Complementarity Principle using Neutron Self - Interference and Tunneling*; P. Ghose and D. Home, ***Physica B*** 174, *403 (1991).*

100. *Comment on "A Critique of Home and Sengupta Derivation of a Bell Inequality"*; D. Home and S. Sengupta, ***Foundations of Physics Letters*** 4, *451 (1991).*

101. *Critique of a Recent Claim of a Formal Difference between Copenhagen and Statistical Interpretations of Quantum Theory*; D. Home and M. A. B. Whitaker, ***Physics Letters A*** 160, *325 (1991).*

102. *Neutral Kaon Physics from the Point of View of Realism*; D. Home and F. Selleri, ***Journal of Physics A*** 24, *L1073 (1991).*

103. *Bell's Theorem and the EPR Paradox*; D. Home and F. Selleri, ***Rivista del Nuovo Cimento*** 14, *9 (1991).*

104. *Local Realistic Models and Non-Physical Probabilities*; D. Home, V. L. Lepore and F. Selleri, ***Physics Letters A*** 158, *357 (1991).*

105. *Is Bell-type Inequality violated for* $K^0 - \overline{K}^0, B^0 - \overline{B}^0$ *…… systems?* A. Datta and D. Home, ***Foundations of Physics Letters*** 4, *165 (1991).*

106. *Manifestly Lorentz Covariant Formulation of the EPR Problem using the Tomonaga-Schwinger Formalism*; P. Ghose and D. Home, ***Physical Review A*** 43, *6382 (1991).*

107. *An Experiment to throw more Light on Light*; P. Ghose, D. Home, and G. S. Agarwal, ***Physics Letters A*** 153, *403 (1991).*

108. *An Analysis of the validity of Local Causality at the Statistical Level in Einstein-Podolsky-Rosen type Situations*; D. Home and M. D. Srinivas, ***Pramana-Journal of Physics*** 35, *303 (1990).*

109. *In Search of New Facets of the EPR Paradox Using* $K^0 - \overline{K}^0, B^0 - \overline{B}^0$ *Type Systems;* in ***Proc. 3rd Int. Symp. Foundations of***

***Quantum Mechanics**, Tokyo*; edited by S. Kobayashi et al. (The Physical Society of Japan, 1989).

110. *Perspectives on Quantum Nonlocality Versus Classical Reality*, Invited Contribution to the Written Round Table on *What is Reality?* published in*: **Che Cos e la Realta*** (Jaca Book, Milan, Italy, 1989); also reprinted in the ***Journal of Indian Council of Philosophical Research*** 6, *17 (1989).*

111. *New Twists to Einstein's Two-Slit Experiment: Complementarity Vis-a-Vis the Causal Interpretation*; D. Home and P. N. Kaloyerou, ***Journal of Physics A*** 22, *3253 (1989).*

112. *New Facets of the Einstein-Podolsky-Rosen Paradox from elementary particle physics*; D. Home, ***Current Science*** 57 (No. 9), *455 (1988).*

113. *Is Quantum Mechanics with CP Nonconservation Incompatible with Einstein's Locality Condition at the Statistical Level*?; A. Datta, D. Home and A. Raychaudhuri, ***Physics Letters A*** 130, *187 (1988).*

114. Wave Function Collapse in the Ensemble Interpretation; P.T. Landsberg and D. Home, in*: **Microphysical Reality and Quantum Formalism***, edited by A. van der Merwe (Kluwer Academic Publishers, Dordrecht, 1988) 1, *65-69.*

115. *Interpretations of Quantum Measurement without the Collapse Postulate*; D. Home and M. A. B. Whitaker, ***Physics Letters A*** **128**, *1 (1988).*

116. *Exploring the Meaning of an Individual Feynman Path*; D. Gangopadhyay and D. Home, ***Physics Letters A*** 126, *219 (1988).*

117. *Einstein-Podolsky-Rosen Paradox for the* $K^0 - \overline{K}^0$ *and* $B^0 - \overline{B}^0$ *Systems*, D. Home, in**: *Quantum Mechanics versus Local Realism***, edited by F. Selleri *(*Plenum, New York, *1988).*

118. *Beyond quantum theory: a realist psycho-biological interpretation of physical reality;* M. Conrad, D. Home and B. Josephson, in*: **Microphysical Reality and Quantum Formalism***, edited by A. van der Merwe (Kluwer Academic Publishers, Dordrecht, 1988) 1, 285 – 293.

119. *A Curious Gedanken Example of the Einstein-Podolsky-Rosen Paradox using CP Nonconservation*; A. Datta, D. Home and A. Raychaudhuri, ***Physics Letters A*** 123, *4 (1987).*

120. *The Many Worlds and Relative States Interpretations of Quantum Mechanics and the Quantum Zeno Paradox*; D. Home and M. A. B. Whitaker, ***Journal of Physics A*** 20, *3339 (1987).*

121. *An Analysis of Wave Function Collapse Using the Ensemble Interpretation*; P. T. Landsberg and D. Home, ***American Journal of Physics*** 55, *226 (1987).*

122. *Quantum Non-Separability versus Local Realism: A New Test Using the* $B^0 - \overline{B}^0$ *Systems;* A. Datta and D. Home, ***Physics Letters A*** 119, *3 (1986).*

123. *Is the Wave Function Collapse a Physical Reality*?; D. Home and M. A. B. Whitaker, ***Physics Letters A*** 117*, 439 (1986).*

124. *The Ensemble Interpretation and Context - Dependence in Quantum Systems*; D. Home and M. A. B. Whitaker, ***Physics Letters A*** 115*, 81 (1986).*

125. *Reflections on the Quantum Zeno Paradox*; D. Home and M. A. B. Whitaker, ***Journal of Physics A*** 19*, 1817 (1986).*

126. *A Stochastic Local Realist Model for the EPR Atomic Cascade Experiments which reproduces the Quantum Mechanical Coincidence Rates*; D. Home and T. Marshall, ***Physics Letters A*** 113*, 183 (1985).*

127. *Response to Comment on a Critical Re-examination of the Aharonov-Bohm Effect*; D. Home, ***American Journal of Physics*** 53*, 778 (1985).*

128. *Bell's Inequality and Non-Contextual Dispersion-Free States*; D. Home and S. Sengupta, ***Physics Letters A*** 102*, 159 (1984).*

129. *Classical Limit of Quantum Mechanics - A Paradoxical Example*; D. Home and S. Sengupta, ***Nuovo Cimento*** *B* 82*, 214 (1984).*

130. *A Critical Re-examination of the Aharonov-Bohm Effect*; D. Home and S. Sengupta, ***American Journal of Physics*** 51*, 942 (1983).*

131. *Heisenberg's Gedanken Experiment Revisited*; D. Home and S. Sengupta, ***American Journal of Physics****,* 51*, 567 (1983).*

132. *Classical Limit of Quantum Mechanics*; D. Home and S. Sengupta, ***American Journal of Physics*** 51**,** *265 (1983).*

133. *Discontinuity in the First Derivative of Schrödinger Wave Function*; D. Home and S. Sengupta, ***American Journal of Physics*** 50*, 552 (1982).*

134. *Extensivity of Entropy and modern form of Gibb's Paradox*; D. Home and S. Sengupta, ***Pramana – Journal of Physics*** 17*, 509 (1981).*

135. *Comments on 'On a Proposed New Test of Heisenberg's Principle'*, D. Home and S. Sengupta, ***Journal of Physics A*** 14*, 539 (1981).*

136. *On Integralness of Orbital Angular Momentum Eigenvalues*; D. Home and S. Sengupta, ***American Journal of Physics*** 48*, 305 (1980).*

137. *Concept of Temperature without the Zeroth law*, D. Home, ***American Journal of Physics*** 45*, 1203 (1977).*