

CURRICULUM VITAE

PERSONAL DETAILS:

NAME: **Dr. K. N. Pathak (KARE NARAIN PATHAK)**

DATE OF BIRTH: 30 July 1941



Present Position: Professor Emeritus,
NASI Platinum Jubilee Fellow,
Former INSA Senior Scientist
Department of Physics and
Former Vice Chancellor
Panjab University, Chandigarh 160 014.

Home Address: H. No. 382, Sector 38 A, Chandigarh-160014.

Tel: 0172 – 2699944 (R), 2534467 (O), cell: +919988360009

E-mail: pathak@pu.ac.in

EDUCATIONAL QUALIFICATION:

- Ph.D., 1966 from IIT Kanpur.
- M.Sc. (1st Class), 1962 from Allahabad University.
- B.Sc. (1st Class), 1960 from Agra University.

SCHOLARSHIP:

- ✓ Awarded the Govt of India Merit Scholarship during M.Sc.
- ✓ Awarded the U.P. Govt. Scholarship during B.Sc.

FIELD OF SPECIALIZATION:

- ✓ Condensed Matter Physics/Solid State Physics

TEACHING:

- ✓ Taught for 36 years various courses in Physics both at the Graduate and Postgraduate level, in India and abroad.

RESEARCH:

- Research Papers published in international journals - **138** (List Enclosed) and papers recently presented in International and National Conference/Symposium -**8**
- Review Articles - **7** (See publications list)
- Supervised **13 Ph.D. Thesis** and **6 M. Phil Thesis** (List Enclosed). Supervised NASI post doctoral fellow Dr. Vinod Ashokan from 2017-2018.
- **Referee** Physical review, Physical Review Letters, Pramana, Indian Journal of Pure and Applied Physics and Proceedings of the National Academy of Sciences.
- Invited to deliver a lecture and 'preside over a session in **International Conference** on Strongly Coupled Coulomb Systems, 3 August - 10 August 1997 at Boston (USA).
- **Chaired** a session in **Adriatico International Conference** in July 1999 at Trieste, Italy.
- **Chaired** a session at **International Conference on Statistical Physics** (Statphysics-22) held at Bangalore on **July 4 - 8, 2004**.
- Participated in the **Conference of Executive Heads of Association of Commonwealth Universities**, held at the University of Adelaide, Australia on April 9-12, 2006.
- Delivered around **50 Invited Lectures** in India and abroad. (List Enclosed).

AWARDS AND HONOURS:

- **Council Member , National Academy of Sciences of India, 2013-14,INSA 2014-16**
- **Fellow, Indian National Science Academy, 2008**
- **Goyal Prize for Physics, 2001** (awarded by Kurukshetra University).
- **Fellow, Punjab Academy of Sciences, 2001**
- **Meghnad Saha Award** for the year 1996 (awarded by U.G.C)
- **Senior Associate Member**, the Abdus Salam International Centre for Theoretical Physics, Trieste, Italy, 1992-1998.
- **Fellow, Indian Academy of Sciences, 1992.**
- **UGC National Fellowship Award** 1991.
- **UGC National Lecturer Award** 1986-87.
- **Founder Member**, Society for Scientific Values, New Delhi.
- **Fellow, National Academy of Sciences, 1983.**
- **Alexander von Humboldt Senior Fellowship Award**, 1977.
- **Associate Member**, the Abdus Salam ICTP, Trieste, Italy, 1972-1977.
- **Post Doctoral Research Fellowship Award**, National Research Council of Canada, 1967.

ORGANISATIONAL ACTIVITIES

- **Organized** an International Advanced School in Statistical Physics from September 28 - October 9, 1987 at Panjab University, Chandigarh.
- **Organized** a National Conference on Industry - University Interface- February 20-21, 1998 at Panjab University, Chandigarh.
- **Organized** a TIFAC (DST) Workshop on Patents Awareness on 18 February 2000.
- **Organized** an International Seminar on BEC and Solitons on 1-3 February 2012.

ADMINISTRATIVE EXPERIENCE:

- **Chairman**, Institute Ethic Committee PGIMR Chandigarh 2017-Present.
- **Member, PGIMER Chandigarh**, Kidney transplant committee, for several years still continuing.
- **Member, PGIMER Chandigarh**, Use of stem cell ethic committee, for several years still continuing.
- **Chairman**, National Academic of Sciences of India, Allahabad, Chandigarh local chapter, from 2014- 18
- **Vice-Chancellor**, Panjab University, Chandigarh, from July 23, 2000 to July 22, 2006.
- **Dean of University Instructions** (equivalent to PVC) Panjab University, Chandigarh, November 1993 - October 1995.
- **Dean, Faculty of Science**, Panjab University, Chandigarh, December 1996 - January 1999.
- **Chairman** (Head of Department), Department of Physics, Panjab University, Chandigarh, August 1989 - May 1992.
- **Coordinator** UGC, CAS/COSIST Program, Physics Department, Panjab University, Chandigarh from 1991 - July 2000.
- **Hon. Director**, Centre for Industry-Institute Partnership Program, Panjab University, Chandigarh, December 1995 - July 2000.
- **Vice President**, Indian Association of Physics Teachers, 1999-2000.
- **Joint Secretary**, Council of Society for Scientific Values, 1999-2000.

Memberships:

- **Member**, National Physical Research Committee, CSIR, New Delhi, 1992-95.
- **Member**, UGC Visiting Committee on 9th and 11th Plan.
- **Member** UGC/COSIST Programme Evaluation Committee.
- **Member**, UPSC Selection Committees.
- **Member** of various research, selection committees at Panjab and other Universities.
- **Member** of Governing Body and Governing Council of Nuclear Science Centre, New Delhi (2001)
- **Member** of Governing Body and Governing Council of IUCA, Pune (2001).
- **Member** of Curriculum and Book Writing Committee - National Council for Educational Research and Training (NCERT), New Delhi (2001).
- **Member** of Governing Council of Central: Scientific Instruments Organization (CSIO), Chandigarh (CSIR Research Lab.) (2001 onwards).
- **Member** Governing Body and Governing Council of Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh (2001-2006).
- **Chairman, Standing Academic Committee** of PGIMER, Chandigarh (2004-2006).
- **Ex-officio Member** of General Council of the National Institute of Agricultural Extension Management at Rajendranagar, Hyderabad (2002-2005)
- **Member** of Governing Body of Indian Institute of Advanced Study, Shimla (2002-2004).
- **Member** of National Organizing Committee for International Conference on Statistical Physics i. e., STATPHYS-22 to be held at Bangalore in July 2004.
- **Visitor's nominee** of the Court, University of Hyderabad, Hyderabad, Andhra Pradesh (2003-2006).
- **Chancellor's nominee on the 'Court of Kurukshetra University', Kurukshetra**, for a term of three years beginning December 2005.
- **Member 3rd Delhi Finance Commission to Local Bodies of the Union Territory of Chandigarh.**
- **Member (continuing)** of Society of Centre for Research in Rural and Industrial Development (CRRID) September 1, 2003.
- **Member** of the Senate of Dr. B.R. National Institute of Technology, (Deemed University), July 2003.
- **Member**, Programme Advisory Committee in Physical Sciences under SERC, DST (GOI)

from March 1998 - 2001.

- **Founder Member, 'IC Centre for Governance' - 2004**
- **Member**, Punjab State Council for Science & Technology (Department of Science, Technology Environment and Non-Conventional Energy), Govt of Punjab, for three years beginning December 2004.
- **Member**, Board of Control of Institute of Integrated Himalayan Studies, Himachal Pradesh University, Shimla.
- **Member** of Academic Advisory Committee of UGC-Academic Staff College, Himachal Pradesh University, Shimla, for two years beginning March, 2004.
- **Member**, Academic Advisory Committee of UGC-Academic Staff College, Kurukshetra University, Kurukshetra.
- **Academic Advisory Committee of the Academic Staff College of Aligarh Muslim University** for a period of two years beginning June 2004.

ACADEMIC POSITIONS HELD:

- **2016 - till date: National Academy of Science (Prayag), *Platinum Jubilee Fellow* at Panjab University Chandigarh.**
- **2019 (1 month) Visiting Scientist at Dresden, Germany/ FU Berlin (Humboldt Foundation)**
- **2014 (2 months) Visiting Scientist at Freie University, Berlin, Germany (Humboldt Foundation)**
- **2012 (2 months) Visiting Scientist at Freie University, Berlin, Germany (Humboldt Foundation)**
- **2011-15: Indian National Science academy (New Delhi), *Senior Scientist* at Panjab University Chandigarh.**
- **2010 (2 months) Visiting Scientist at Freie University, Berlin, Germany (DFG)**
- **2008-10 U.G.C. Emeritus Fellow at Physics department, P U Chandigarh**
- **2008 (2 months) Visiting Scientist at Freie University, Berlin, Germany (AvH)**
- **2006 (3 months): Visiting Scientist at Freie University, Berlin, Germany (AvH)**
- **2000-2006 : Vice Chancellor Panjab University Chandigarh**
- **1993 - 2001: Senior Most Professors in Panjab University, Chandigarh.**
- **1977 - 1993: Professor of Physics, Panjab University, Chandigarh.**
- **1999: Visiting Senior Scientist, The Abdus Salam Centre for Theoretical Physics, Trieste, Italy**
- **1992-1998: Senior Associate Member, the Abdus Salam International Centre for**

Theoretical Physics, Trieste, Italy.

- **1997:** Visiting Professor, Royal Military College, Kingston, Ontario, Canada. Also visited Department of Physics, University of Georgia, Athens, USA
- **1996:** Visiting Professor Royal Military College of Canada, Kingston, Ontario.
- **1992:** Senior Alexander Humboldt Fellow at Technical University, München, Germany.
- **1993:** Visiting Professor, Royal Military College, Kingston, Ontario, Canada.
- **1991:** Visiting Professor, Lake head University, Thunder Bay, Ontario, Canada.
- **.1985 - 1988:** Visiting Professor, Lake head University, Thunder Bay, Ontario, Canada.
- **1983 - 1984:** Visiting Professor, Lake head University Thunder Bay, Ontario, Canada.
- **1982:** Visiting Scientist, International Centre for Theoretical Physics, Trieste, Italy.
- **1977 - 1979:** Alexander von Humboldt Stiftung Senior Fellow, Department of Physics, Technical University, München, Garching, Germany.
- **1979:** Visiting Professor, North Western University, Evanston, Illinois, U.S.A.
- **1972 - 1976:** Associate Member, the Abdus Salam International Centre for Theoretical Physics, Trieste, Italy.
- **1972:** Visited Institute of Theoretical Physics, Gutenberg, Sweden.
- **1970 -1976:** Reader in Physics, Panjab University, Chandigarh.
- **1969 - 1970:** Research Associate, Dept. of Physics, North western University, Evanston, Illinois U.S.A.
- **1967 - 1969:** Postdoctoral Research Fellow, National Research Council, Ottawa, Canada
- **1966 - 1967:** Lecturer in Physics, Indian Institute of Technology, Powai, Mumbai.

INVITED LECTURES:

- International Centre for Theoretical Physics, Trieste, Italy. 1973,1974 & 1975
- Nuclear Physics and Solid State Physics Symp. Calcutta, India. 1975
- 63rd session of Indian Science Congress, Waltair, India. 1975
- Denmark Atomic Energy Establishment, Roskilde, Denmark. 1978
- Sweden Atomic Energy Establishment Studsvik, Sweden. 1978
- Institute of Theoretical Physics, Gutenberg, Sweden 1978
- Technical University, Munich, Germany. 1978
- Freie University, Berlin, Germany 1978

- North-western University Evanston, Illinois, USA 1978
- Indian National Science Academy, Chandigarh Chapter 1980
- Nuclear Physics and Solid State Physics Symp. New Delhi, India 1980
- International Centre for Theoretical Physics, Trieste, Italy 1982
- Lake head University, Thunder Bay, Canada 1984
- National Symposium on Disordered Material University of Rajasthan, Jaipur, India. 1990
- University of Paris Sud Orsay, France 1991
- Technical University, Munchen, Germany 1992
- International Seminar on Current Developments in Disordered Material, Kurukshetra University, Kurukshetra, India. 1995
- University of Georgia, Athens, USA 1997
- University of Konstanz, Germany. 1998
- K.S. Krishnan Conference in Condensed Matter Physics, University of Allahabad, Allahabad, India. 1998
- Punjab Academy of Sciences: plenary lecture 2003
- Lecture delivered during PANEL DISCUSSION on '**Status of Basic Sciences in Higher Education**' on 30.9.2003 at Punjabi University, Patiala. Journal, Punjab Academy of Sciences, 1 (2) 2004.
- **Current Fluctuations in Quantum gases** , on 06-01-2009 at University of Wisconsin, Milwaukee, USA
- **Current Fluctuations in Dilute Quantum gases** , on 11-02-2009 at Indian Institute of Educational Research and Teaching, Mohali , Punjab Under INSA
- **Matter at Ultra Low Temperatures**, on Science Day i. e 27 -02-2009 at DRDO Chandigarh
- **Nano Materials –Properties & Applications**, Maharaja Agrasen Institute of Technology Delhi on 8 April,2011

Ph.D. & M.Phil Theses Supervised

- The following students have worked under my supervision and have obtained their **Ph.D.** degree:

Sr. No.	Name	Year of Award	Position held
1.	Dr. H.B. Singh	1975	Working in an R&D Laboratory in Germany
2.	Dr. Bansal	1975	Working in an R & O Laboratory in Germany
3.	Dr. V. K. Jindal	1977	Professor of Physics, P.U. Chandigarh
4.	Dr. M. R. Monga	1978	Professor of Physics, P.U. Chandigarh
5.	Dr. P.K. Kahol	1978	Professor of Physics, Wichita State University, Arkansas, USA
6.	Dr. G.S. Dubey	1981	Working in University of New York, USA.
7.	Dr. J.S. Thakur	1984	Working as research Scientist in Sydney, Australia.
8.	Dr. G.K. Agarwal	1984	Senior lecturer in Sahu Jain College, Nazibabad, U.P.
9.	Dr. K. Tankeshwar	1990	Reader in Physics, P.U. Chandigarh
10.	Dr. B. Singla	1993	Lecturer in Physics, Arya College, Ludhiana, Punjab
11.	Rakesh Kumar	1997	Scientist, CSIO, Chandigarh
12.	Rajneesh Kumar	1998	California, USA
13.	Renu Bala	2014	Asst. Prof. MCM DAV College, Chandigarh

- The following students have obtained their M.Phil. Degree under my supervision:

1. Mr. G.K. Agarwal
Head, Physics Department
Sahu Jain College
Nazibabad.
2. Ms. Rajni Verma
Chandigarh.
3. Mr. Zile Singh
Physics Department
University College
Rohtak.
4. Ms. Charanjit Kaur
Delhi.
5. Ms. Anju Sharma
Govt College for Girls, Chandigarh.
6. Ms. Komal Kumari, HPU, Shimla

List of Research Publications
(Prof. K.N. Pathak)

Papers published in International Journals

1. Theory of Anharmonic Crystals, (K. N. Pathak) Phys. Rev. **139 A**, 1569-1580 (1965).
2. Thermal Expansion of Linear Lattices, (K. N. Pathak and B. Deo) Phys. Stat. Sol. **17**, 77 (1966).
3. Effect of Lattice Anharmonicity on the Debye - Waller Factor, (K. N. Pathak and B. Deo) Physica **35**, 167-176 (1967).
4. Mean Square Velocity of an Atom in Anharmonic Crystals, (K. N. Pathak) Proc. Phys. Soc. (London) **92**, 998 (1967).
5. Shear Viscosity of Insulating Solids, (R. Kishore and K. N. Pathak) Phys. Lett. **25 A**, 201 (1967).
6. Shear Viscosity of Electron Gas in Metals, (R. Kishore and K. N. Pathak) Phys. Rev. **183**, 672 (1969).
7. Thermodynamics of Anharmonic Crystals, (K. N. Pathak Y. P. Varshni) Phys. Lett. **28 A**, 539 (1969).
8. Excitation Spectrum of Interacting Polaritons in Dielectric Crystals, (C. Mavroyannis and K. N. Pathak) Phys. Rev. **182**, 872 (1969).
9. Mössbauer Recoilless Fraction of Solid Krypton, (P. Vashishta and K. N. Pathak) Physica **48**, 474 (1970).
10. Collective Motion in Classical Liquids, (K. N. Pathak and K.S. Singwi) Bull. Am. Phys. Soc. **15**, 323 (1970) and Phys. Rev. **A 2**, 2427-2434 (1970).
11. Neutron Scattering from Liquid Helium II at Large Momentum Transfer and the Condensate Fraction, (W. C. Kerr, K. N. Pathak, and K. S. Singwi) Phys. Rev. **A 2**, 2416 (1970).
12. Collective Motion in Liquid Sodium, (C. Cubiotti, K. N. Pathak, K. S. Singwi and M. P. Tosi) Lett. Nuovo Cimento **4**, 799 (1970).
13. Many Electron Correlation Effects on Nuclear Spin Lattice Relaxation Rates and Knight Shift in Alkali Metals, (P. Bhattacharya, K. N. Pathak and K. S. Singwi) Phys. Rev. **B3**, 1568

(1971)

14. Second Order Quartic Anharmonic Contribution to the Free Energy of Simple Crystals, (K. G. Aggarwal and K. N. Pathak) Phys. Lett. **35 A**, 255 (1971).
15. Effect of P 3/2 Interband Polarization on Mobility of zero Gap/Semiconductor, (J. G. Broman, L. Liu and K. N. Pathak) Phys. Rev. **B 4**, 664 (1971).
16. Neutron Scattering from He II at Large Momentum Transfer and Condensate Fraction, (W. C. Kerr, K. N. Pathak and K. S. Singwi) Phys. Rev. **A 4**, 2413 (1971).
17. Spin Susceptibility of Interacting Electron Gas, (H. B. Singh and K. N. Pathak) Phys. Rev. **B 6**, 2978 (1972).
18. Collective Motion in Liquid Sodium, (K. N. Pathak, K. S. Singwi, G. Cubiotti and M. P. Tosi) Nuovo Cimento **B 13**, 185 (1973).
19. Evaluation of the Free Energy of an Anharmonic Crystal, (K. G. Aggarwal and K. N. Pathak) Phys. Rev. **B 7**, 4449 (1973).
20. Electron Correlation and Moment Sum Rules, (K. N. Pathak and P. Vashishta) Bull. Am. Phys. Soc. 17, 279 (1972) and Phys. Rev. **B 7**, 3649 (1973).
21. Collective Excitations in Classical Liquids, (K. N. Pathak and Ravinder Bansal) J. Phys. C: Solid State Phys. **6**, 1989 (1973) and ICTP Preprint IC/72/61.
22. Structure Factor of the Electron Liquid from the Moment Sum Rules, (H. B. Singh and K. N. Pathak) Phys. Rev. **B 8**, 6035 (1973).
23. Sum Rules and Atomic Correlations in Classical Liquids, (Ravinder Bansal and K. N. Pathak) Phys. Rev. **A 9**, 2773 (1974).
24. Self Motion in Liquid Sodium, (D. K. Chaturvedi, J. S. Bajjal and K. N. Pathak) Phys. Rev. **A 9**, 2128 (1974).
25. Self Energy of Phonons in an Anharmonic Crystal to 0 (λ^4), (R. S. Tripathi and K. N. Pathak) Nuovo Cimento **21 B**, 289-302 (1974) and ICTP Preprint IC/73/117.
26. A Sum Rule for the Transverse Current Correlation Function in an Electron liquid, (H. B. Singh and K. N. Pathak) Phys. Lett. **A 47**, 295 (1974).
27. Two Phonon Excitations in an Anharmonic Crystal, (K. N. Pathak and V. K. Jindal) Lett. Nuovo Cimento **10**, 409 (1974).

28. Spin Correlations in an Electron Liquid at Metallic Densities, (H. B. Singh and K. N. Pathak) Phys. Rev. **B 10**, 2764 (1974).
29. Sum Rules and Atomic Correlations in Classical Liquids, (Ravinder Bansal and K. N. Pathak) Phys. Rev. **A 11**, 724 (1975).
30. Sum Rules and Atomic Correlations in Classical Liquids- II, (Ravinder Bansal and K. N. Pathak) Physica **78**, 556 (1974).
31. Collective Motion in Classical Liquids IV - Liquid Rubidium, (Ravinder Bansal and K. N. Pathak) Phys. Rev. **A 11**, 1450 (1975).
32. High Temperature Heat Capacity of Anharmonic Crystal to order λ^4 , (V. K. Jindal and K. N. Pathak) Phys. Rev. **B 11**, 972 (1975).
33. Diamagnetic Susceptibility of an Interacting Electron Gas, (H. B. Singh and K. N. Pathak) Phys. Rev. **B 11**, 4246 (1975).
34. Ionic Correlations in Fused Salts, (D. K. Chaturvedi and K. N. Pathak) Phys. Lett. **A 51**, 359 (1975).
35. Viscosities of Liquid Rubidium, (P. K. Kahol, Ravinder Bansal and K. N. Pathak) J. Phys. C: Solid State Phys. **8**, 1823 (1975).
36. Collective Excitations in Liquid Rubidium, (P. K. Kahol, Ravinder Bansal and K. N. Pathak) Phys. Rev. **A 14**, 408 (1976).
37. Theory of Collective Motions in Liquids, (P. K. Kahol, Ravinder Bansal and K. N. Pathak) J. Phys. C: Solid State Phys. **9**, L259 (1976).
38. Fifth Sum Rule for the Density Response Function, (Ravinder Bansal, M. P. Khanna and K. N. Pathak), ICTP (Trieste) report IC/76/22.
39. Thermal Expansion of Sodium and Potassium, (V. K. Jindal and K. N. Pathak) Phys. Rev. **B 15**, 3704 (1976).
40. Two Phonon Bound States in Rare Gas Crystals, (V. K. Jindal and K. N. Pathak) Phys. Rev. **B 15**, 1202 (1977).
41. Memory Functions Approach to the Excitation Spectrum of an Electron Liquid, (V. K. Jindal, H. B. Singh and K. N. Pathak) Phys. Rev. **B 15**, 252 (1977).
42. Dynamical Current Correlation in Simple Liquids, (P. K. Kahol, D.K. Chaturvedi and K. N. Pathak) Physica **87 A**, 192 (1977).

43. Phonon Number Density in Anharmonic Crystal, (M. R. Monga and K. N. Pathak) Phys. Rev **B 15**, 4130 (1977).
44. Sum Rules and Atomic Correlations in Classical Liquids III - Numerical Estimates and Applications, (Ravinder Bansal and K. N. Pathak) Phys. Rev. **A 15**, 2519 (1977).
45. Sum Rules and Atomic Correlations in Classical Liquids IV - Coherent and Incoherent Scattering Functions, (Ravinder Bansal and K. N. Pathak) Phys. Rev. **A 15**, 2531 (1977).
46. Numerical Estimates of Anharmonic Contribution to Thermal Expansion and Free energy to 0 (λ^4), (V. K. Jindal and K. N. Pathak) Phys. Rev. **B 16**, 1756 (1977).
47. Dynamical Structure Factors in Binary Liquids I - Molten RbBr, (P. K. Kahol, D. K. Chaturvedi and K. N. Pathak) J. Phys. C: Solid State Phys. **10**, 4181 (1977).
48. Dynamical Structure Factor in Binary Liquids II - Liquid Na-K Alloy, (K. N. Swami, P. K. Kahol, D. K. Chaturvedi and K. N. Pathak) J. Phys. C: Solid State Phys. **10**, 4191 (1977)
49. Mean Square Displacement of an Atom in a Crystal to 0 (λ^4), (M. R. Monga, K. C. Sharma and K. N. Pathak) Phys. Rev. **B 18**, 5427 (1978).
50. Self Energy of Phonons in Anharmonic Crystals II - Application to Monatomic Linear Chain, (M. R. Monga and K. N. Pathak) Phys. Rev. **B 16**, 5859 (1978).
51. Effect of Anharmonicity on Superconducting metal Hydrogen System, (Nathi Singh, V. K. Jindal and K. N. Pathak) Phys. Rev. **B 16**, 3271 (1978).
52. Self Energy of Phonons in an Anharmonic Crystals of order (λ^4) III-Approximate Numerical Results for Ionic Crystals, (M. R. Monga, V. K. Jindal and K. N. Pathak) Phys. Rev. **B 19**, 1230 (1979).
53. Dynamical Structure Factors in Binary Liquids III - Molten NaCl, (P. K. Kahol, D. K. Chaturvedi and K. N. Pathak) J. Phys. C: Solid State Phys. **11**, 1269 (1978).
54. Dynamical Correlations in Binary Liquids IV - Fourth Moment of Current and its Applications (P. K. Kahol, D. K. Chaturvedi and K. N. Pathak) J. Phys. C: Solid State Phys. **11**, 4135 (1978).
55. Sum Rules and Dynamical Correlations in Classical One Component Plasma, (H. B. Singh, Aruna Sharma and K. N. Pathak) Phys. Rev. **A 19**, 899 (1979).
56. Damping of Plasmon in Electron Liquid, (A. Sharma, M. R. Monga and K. N. Pathak) Solid State Comm. **36**, 253 (1980).

57. Frequency Moments and Dynamical Correlation Function of Liquid Lead, (G. S. Dubey, R. Bansal and K. N. Pathak) J. Phys. C: Solid State Phys. **13**, 6119 (1980).
58. Frequency-Spectrum of Velocity Auto-Correlation Function of Liquid Rubidium, (G. S. Dubey, V. K. Jindal and K. N. Pathak) Progress of Theoretical Physics **64(6)**, 1893-1901 (1980).
59. Dispersion and Damping of Plasmon in Metals, (K. N. Pathak and M. R. Monga), ICTP Trieste (Italy) Report IC/80/176.
60. Sum Rules for the Current Correlation Function of 2D Classical Electron Liquid, (G. K. Aggarwal, J. S. Thakur and K. N. Pathak) Phys. Lett. **84 A**, 213(1981).
61. Damping of Zero Sound in Liquid ^3He , (J. S. Thakur and K. N. Pathak) Solid State Comm. **41**, 863 (1982).
62. Sum Rules and Electron Correlation in Two Dimensional Electron Liquid, (R. P. Sharma, H. B. Singh and K. N. Pathak) Solid State Comm. **42**, 823 (1982).
63. Sum rules and Dynamical Properties of Two Dimensional Classical Electron Liquid, (G. K. Aggarwal and K. N. Pathak) J. Phys. C: Solid State Phys. **15**, 5063 (1982).
64. Static Properties of Two Dimensional Classical Plasma in Weak and Intermediate Couplings, (G. K. Aggarwal and K. N. Pathak), J. Phys. C: Solid State Phys. **15**, 5999 (1982).
65. Velocity Auto-Correlation Function of a 2D Classical Electron Liquid, (G. K. Aggarwal and K. N. Pathak) J. Phys. C: Solid State Phys. **16**, 1887 (1983).
66. Static Correlations in 2D Classical Electron Liquid, (G. K. Aggarwal and K. N. Pathak) Phys. Rev. **A 28**, 3617 (1983).
67. Some Properties of Quantum Two Dimensional Electron Gas with $\ln(r)$ Interaction, (J. S. Thakur and K. N. Pathak) J. Phys. C: Solid State Phys. **16**, 6551 (1983).
68. Excitations in Normal Liquid ^3He , (K. N. Pathak and M. Lucke) Phys. Rev. **B 29**, 2468 (1983).
69. Binary Collisions Effect on Density Fluctuations of Dense Gases, (S. Ranganathan and K. N. Pathak) Phys. Rev. **A 29**, 972 (1984).
70. Dynamical Properties of Two Dimensional Coulomb Fluids, (G. K. Aggarwal, K. N. Pathak and S. Ranganathan) J. Phys. C: Solid State Phys. **17**, 2537 (1984).
71. Density Fluctuations in Dense Krypton Gas, (K. N. Pathak and S. Ranganathan) J. Phys. C: Solid State Phys. **17**, 2833 (1984).

72. Dynamical Structure Factor of Dense Gases, (S. Ranganathan and K. N. Pathak) Phys. Rev. **A 29**, 3320 (1984).
73. Frequency Sum Rules of Correlation Functions in Dense Gases I- Molecular Dynamics Results, (K. N. Pathak, S. Ranganathan, R. Bansal and W. Bruns) Phys. Rev. **A 31**, 960 (1985).
74. Frequency Sum Rules of Correlation Functions in Dense Gases II- Applications, (S. Ranganathan and K. N. Pathak) Phys. Rev. **A 31**, 966 (1985).
75. Self Energy of a Charge near a Metal Surface, (J. Mahanty, K. N. Pathak and V. V. Paranjape), Solid State Comm. **54**, 649 (1985).
76. Self Energy of a Moving Charge in the Presence of a Metal Surface, (J. Mahanty, K. N. Pathak and V. V. Paranjape) Phys. Rev. **33**, 2333 (1986).
77. Saturation of the Image Potential at the Metallic Surface, (K. N. Pathak and V. V. Paranjape) Nuovo Cimento **D- 8(1)**, 52 (1986).
78. Interaction Energy between a Positronium and a Metal Surface, (V. V. Paranjape and K. N. Pathak) Phys. Rev. **B 32**, 3502 (1985).
79. Atom Surface Interaction: Saturation Effects, (K. N. Pathak and V. V. Paranjape) Solid State Comm. **57**, 211 (1986).
80. Self Diffusion Coefficients of Lennard Jones Fluids, (K. Tankeshwar, K. N. Pathak and S. Ranganathan) J. Phys. C: Solid State Phys. **20**, 5749 (1987).
81. Shear Viscosity of Lennard Jones Fluids, (K. Tankeshwar, K. N. Pathak and S. Ranganathan) J. Phys. C: Solid State Phys. **21**, 3607 (1988).
82. Self Energy of Positronium near a Metal Surface, (K. N. Pathak, V. K. Jindal and V. V. Paranjape) Phys. Rev. **B 37**, 10891 (1988).
83. Collective Density Excitations in Liquid Aluminium, (K. Tankeshwar, G. S. Dubey and K. N. Pathak) J. Phys. C: Solid State Phys. **21**, L811 (1988).
84. Energy Current Density Correlation Function I - Frequency Sum Rules, (K. Tankeshwar, K. N. Pathak and S. Ranganathan) J. Phys.: Condens. Matter **1**, 6181 (1989).
85. Energy Current Density Correlation Function II Thermal Conductivity, (K. Tankeshwar, K. N. Pathak and S. Ranganathan) J. Phys.: Condens. Matter **1**, 6193 (1989).
86. Potential Energy between two Charges near a Metal Surface, (V. V. Paranjape and K. N.

- Pathak) Solid State Comm. **70**, 359 (1989).
87. Formation of Hydrogenic State near a Metal Surface, (K. N. Pathak, V. V. Paranjape and M. R. Monga) Phys. Rev. **B 40**, 9565 (1989).
 88. Correlations in Two-Dimensional Quantum Electron Gas with $\ln(r)$ interaction, (K. Dharamvir and K. N. Pathak) J. Phys.: Condens. Matter **2**, 4429 (1990).
 89. Collective Modes and Liquid Structure Theory of Metallic Rb, (N. H. March, K. N. Pathak and A. Ascough) Phys. Chem. Liquids **21**, 203 (1990).
 90. Theory of Transport Coefficients of Simple Fluids, (K. Tankeshwar, K. N. Pathak and S. Ranganathan) J. Phys.: Condens. Matter **2**, 5891 (1990).
 91. Velocity Auto-Correlation Function in Two Dimensional Classical Electron Fluid, (B. Singla, K. Tankeshwar and K. N. Pathak) Phys. Rev. **A 41**, 4306 (1990).
 92. Dynamical Structure Factor of Fluid Ar^{36} , (K. Tankeshwar, K. N. Pathak and S. Ranganathan) Phys. Chem. Liquids **22**, 75 (1990).
 93. Reinvestigation of Two Phonon Bound States in Rare-Gas Crystals, (R. Bhandari, V. K. Jindal and K. N. Pathak) Phys. Rev. **B 14**, 9185 (1990).
 94. A Simple Model for the Calculation of Self Diffusion, (K. N. Pathak, K. Tankeshwar and B. Singla) J. Phys.: Condens. Matter **3**, 3173 (1991).
 95. Self-energy of a Moving Charged Particle in the Presence of a Metal Surface, (B. Singla, M. R. Monga and K. N. Pathak) Phys. Rev. **B 44**, 9012 (1991).
 96. Freezing Transition of Two-dimensional Lennard-Jones Fluids, (S. Ranganathan and K. N. Pathak) Phys. Rev. **A 45**, 5789 (1992).
 97. Molecular-Dynamics Study of Two-dimensional Lennard-Jones Fluids, (S. Ranganathan, G. S. Dubey and K. N. Pathak) Phys. Rev. **A 45**, 5793 (1992).
 98. Self-energy of a Hydrogenic Atom near a Metal Surface, (B. Singla, V. K. Jindal, K. N. Pathak and V. V. Paranjape) Phys. Rev. **B 46**, 7088 (1992).
 99. Plasmon Excitation in a Metallic Slab, (K. Dharamvir, B. Singla, K. N. Pathak and V. V. Paranjape), Phys. Rev. **B 48**, 12330 (1993).
 100. Self Energy of a Charged Particle Placed in a Gap between two Metal Surfaces and near a Metallic Slab, (B. Singla, K. Dharamvir, K. N. Pathak and V. V. Paranjape) Phys. Rev. **B 48**, 15256 (1993).

101. Diffusion in Liquid Alkali Metals, (S. Ranganathan and K. N. Pathak) J. Phys.: Condens. Matter **6**, 1309 (1994).
102. Potential Effects on Atomic Motions in Liquid Alkali Metals, (S. Ranganathan, K. N. Pathak and Y. P. Varshni) Phys. Rev. **E 49**, 2835 (1994).
103. Binary Collision Contributions to Atomic Motions in Fluids, (K. N. Pathak, S. Ranganathan and R. E. Johnson) Phys. Rev. **E 50**, 1135 (1994).
104. Analytical Solution of Mori's Equation with Hyperbolic Secant Memory, (K. Tankeshwar and K. N. Pathak) J. Phys. Condens. Matter **6**, 591 (1994).
105. Transport Coefficient of Classical Dense fluids: A simple Approach, (Rajneesh K. Sharma, K. Tankeshwar and K. N. Pathak) J. Phys. Condens. Matter **7**, 537 (1995).
106. Self Diffusion Coefficient and Force Auto-Correlation Function, (Rajneesh K. Sharma, K. N. Pathak, K. Tankeshwar and S. Ranganathan) Phys. Chem. Liquids **29**, 59 (1995).
107. Realization of Hyperbolic Secant Memory Function, (K. Tankeshwar and K. N. Pathak) J. Phys.: Condens. Matter **7**, 5729 (1995).
108. Spin Correlations in a Two-Dimensional Electron Gas, (R. K. Moudgil, P. K. Ahluwalia and K. N. Pathak) Phys. Rev. **B 51**, 1575 (1995).
109. Static and Dynamic Correlation Functions of a Two-Dimensional Quantum Electron Fluid, (R. K. Moudgil, P. K. Ahluwalia and K. N. Pathak) Phys. Rev. **B 52**, 11945 (1995).
110. Collective Density Excitation in Liquid Cs, (K. Tankeshwar, K. N. Pathak and S. Ranganathan), Phys. Chem. Liquids **30**, 95 (1995).
111. Longitudinal and Bulk Viscosities of Lennard Jones Fluids, (K. Tankeshwar, K. N. Pathak and S. Ranganathan) J. Phys.: Condensed Matter **8**, 10847 (1996).
112. Ground State of a Double-Layer Charged Bose System, (R. K. Moudgil, P. K. Ahluwalia and K. N. Pathak) Phys. Rev. **B 56**, 14776 (1997).
113. Static and Dynamic Properties of a Two Dimensional Charged Bose Fluid, (R. K. Moudgil, P. K. Ahluwalia, K. Tankeshwar and K. N. Pathak) Phys. Rev. **B 55**, 544 (1997).
114. Binary Collision Contribution to Longitudinal Current Correlation Function, (Rajneesh K. Sharma, K. Tankeshwar, K. N. Pathak S. Ranganathan and R. E. Johnson) Phys. Rev. **E 50**, 1550 (1997).
115. Energy States of a Hydrogenic Atom placed between two Metal Slabs, (V. Paranjape, P. V.

- Panat and K. N. Pathak) Phys. Rev. **B 55**, 7227 (1997).
116. Binary Collision Contribution to Transverse Current Correlation Function, (Rajneesh K. Sharma, K. Tankeshwar, K. N. Pathak, S. Ranganathan and R. E. Johnson) J. Chem. Phys. **108**, 2919 (1998).
 117. Binary Collision Contribution to Longitudinal Current Correlation Function of Dense Fluids- Numerical Results, (K. N. Pathak, Rajneesh K. Sharma, K. Tankeshwar, S. Ranganathan and R. E. Johnson) Phys. Rev. **E 57**, 6195 (1998).
 118. Sum Rules and Density Response of a 2D charged Bose Fluid, (R. K. Moudgil, K. Tankeshwar and K. N. Pathak) Phys. Chem. Liq. **37**, 89 (1999).
 119. A Molecular Dynamics Study of Liquid Cesium along Vapour Pressure Curve, (S. Ranganathan, K. Tankeshwar and K. N. Pathak) Phys. Chem. Liq. **37**, 237 (1999).
 120. Ground State Correlations in Charged Bose Quantum Wire, (R. K. Moudgil, K. Tankeshwar and K. N. Pathak) J. Phys. Condens. Matter **11**, 4665 (1999).
 121. Coupled charged Bose Quantum Wires, (R. K. Moudgil, K. Tankeshwar, and K. N. Pathak S. Ranganathan) J. Phys. Condens. Matter **11**, 3413 (1999).
 122. Current Correlation Functions of Ideal Fermi Gas at Finite Temperature, (R. P. Kaur, K. Tankeshwar and K. N. Pathak) Pramana **58**, **703** (2002).
 123. Molecular Dynamics Study of Diffusion in Bilayer Electron Gas, (S. Ranganathan, R. E. Johnson and K. N. Pathak) Phys. Rev. **E 65**, 051203 (2002).
 124. Binary and Multiparticle Contribution to Velocity Autocorrelation Function, (Puneet Sharma, K. Tankeshwar, S. Ranganathan and K. N. Pathak) Phys. Rev. **E 68**, 021202 (2003).
 125. Role of Many-Body Correlations in Dynamics of Liquids, (P. Sharma, K. Tankeshwar, K. N. Pathak and S. Ranganathan), Phys Rev. **E 70**, 051202 (2004).
 126. The Heat Current Density Correlation Function: Sum Rules and Thermal Conductivity, (Shaminder Singh, K. Tankeshwar, K. N. Pathak and S. Ranganathan). J. Phys.: Condens. Matter **18**, 1395 (2006).
 127. Dynamics of uniform quantum gases I: Density and current correlations, (J. Bosse, K. N. Pathak and G.S. Singh) Physica A **389** 408-418(2010)
 128. Density excitations of a harmonically trapped ideal gas, (Jai Carol Cruz, C. N. Kumar, K. N. Pathak and J. Bosse) Pramana J. Phys: **74**, 83-96 (2010).

129. Dynamics of Uniform Quantum Gases: II. Magnetic Susceptibility (J. Bosse, K. N. Pathak and G. S Singh), *Physica A* **389**, 1173-1177 (2010)
130. Confinement and Correlation effects on plasmons in atomic scale metallic wire, (R. K. Moudgil, Vinayak Garg and K.N. Pathak) *J. Phys: Condens. Matter* **22**, 135003-06 (2010).
131. Analytical pair correlations in ideal quantum gases: Temperature-dependent bunching and antibunching (J. Bosse, K. N. Pathak, and G. S. Singh) *Phy. Rev. E* **84** , 042101-4(2011).
132. Exchange and correlation effects on density excitation spectra of metallic quantum wires at finite temperature (Renu Bala, R. K. Moudgil, Sunita Srivastava, and K. N. Pathak) *J. Phys. Condens. Matter* **24**, 245302 (2012)
133. Spin Polarized Electrons in a Metallic Quantum Wire (Renu Bala, R. K.Moudgil, Sunita Srivastava and K.N.Pathak) *Eur.Phys.J. B* **87:5** ,1-12 (2014)
- 134 Particle Density and Transition Temperature of Weakly Interacting Quantum Gases (Renu Bala, Sunita Srivastava and K. N. Pathak) *Eur.Phys.J. B* (2015) 88: 258
- 135 Study of weakly interacting trapped Bose gas (Renu Bala and Kare Narain Pathak) *Eur Phy.B.* 89:228 (2016)
- 136 Dependence of structure factor and correlation energy on the width of electron wires (Vinod Ashokan, Renu Bala, Klaus Morawetz, K. N. Pathak) *Eur Phy.B.* 91:29 (2018)
- 137 Conditions where RPA becomes exact in the high-density limit (Klaus Morawetz, Vinod Ashokan, Renu Bala, Kare Narain Pathak) *Phys. Rev.B.* 97, 155147 (2018)
- 138 One-dimensional electron fluid at high density (Vinod Ashokan, N. D. Drummond, K. N. Pathak) *Phys. Rev.B* . 98, 125139 (2018)
- 139 Exact ground-state properties of the one dimensional electron gas at high density (V. Ashokan, Renu Bala, Klaus Morawetz , and K. N. Pathak) *Phys. Rev.B* . 101, 075130 (2020)

Recent Papers Presented in National / International Symposium

1. Plasmons in an Atomic-Scale Metallic Wire (Vinayak Garg, R. K. Moudgil, and K. N.Pathak) Proceedings of the 54th DAE Solid State Physics Symposium (2009) pp 569.

2. Effective Interaction Potential in a Nano-Sized Metal Wire,(Arti Sharma, R. K. Moudgil, and K. N. Pathak) Proceedings of the 54th DAE Solid State Physics Symposium (2009), pp 409.
3. Density response of harmonically trapped 1 d quantum gases (J. Bosse, B. Liebchen, and K. N. Pathak, G. S. Singh) presented in the international conference “Quo Vadis Bose Einstein condensation?”, at Dresden, Germany from August, 16-20 (2010).
4. Effect of exchange-correlations and temperature on the plasmons in nano-scale gold wire. (Renu Bala, R. K. Moudgil, Sunita Srivastava and K. N. Pathak) Proceedings of 55th DAE Solid State Physics Symposium 2010, AIP Conf. Proc. **1349**, 433 (2011).
5. Dynamic Density Response of Trapped Interacting Bose Gas (Renu Bala, J. Bosse & K.N.Pathak) presented at International conference on Advances in condensed and Nano Materials, arXiv 1110.1989 and AIP Conf. Proc. **1393**, 335 (2011).
6. Density Fluctuations in uniform Quantum Gases (J. Bosse, K.N.Pathak & G .S. Singh) presented, arXiv 1110.1993 and AIP Conf. Proc. **1393**, 54 (2011).
7. Plasmonic Excitations in Nano Metallic Wires: Dependence on Wire Width and Electron Number Density , (Renu Bala, R. K. Moudgil, and K. N. Pathak) in Emerging Paradigms in Nanotechnology edited by R. C. Sobti, A Kaushik, B Singh and S.K. Tripathi published by Dorling Kindersley (India) Pvt. Ltd (2013)
8. Density Fluctuations in Trapped quantum Gases(Renu Bala, Niranjana M, J.Bosse and K.N.Pathak) “Quo Vadis Bose Einstein condensation?”, at Bad Honnef, Germany from August, 21-25 (2012).
9. Single particle density and density correlation function for trapped quantum gases (Renu Bala, K.N.Pathak and J. Bosse) presented at "Advanced workshop on non-equilibrium bosons: from driven condensate to non-linear optics" at Trieste (Italy) from 19-23 August (2013).
10. Single particle density of trapped interacting quantum gases (Renu Bala, K.N.Pathak and J. Bosse) presented at ICCMP, 4-6 Nov at HPU Shimla (2014).
11. Density of weakly interacting trapped quantum gases (Renu Bala, K.N.Pathak and J. Bosse)

“Quo Vadis Bose Einstein condensation V?”, at Bad Honnef, Germany from 16-20
December(2014)

Review Articles

1. Collective Excitation in Simple Liquids, Nuclear Physics and Solid State Phys. (India) **18 A**, 265 (1975).
2. Langevin Equation and its Applications to Liquid Dynamics: Lecture Notes in Phys., Springer, Berlin **184**, 197 (1983).
3. Liquid State Dynamics, article in a book published by Eastern Willey, 1990, pp.289-325.
4. Dynamical Correlation Function and Transport Properties of Dense Fluids (K. N. Pathak and K. Tankeshwar) in *Correlations in Electronic and Atomic Fluids*, edited by P. Jena, R. Kalia, P. Vashishta and M. P. Tosi, published by World Scientific, New Jersey, 1990, pp. 109-124.
5. Binary Collision Dynamics in Fluids in *Disordered Materials - Current Developments*, Edited by D. K. Chaturvedi and G. E. Murch (Transtech Publication, Germany), 1996, pp. 13.
6. Structure and Dynamics of Two-Dimensional Quantum Fluids (K. N. Pathak and R. K. Moudgil) in *Electron Correlations in Atoms and Solids* (New Age International (P) Limited, India), 1998.
7. Binary Cluster Dynamics of Fluids (K. N. Pathak and K. Tankeshwar) in *Condensed Matter Physics edited by B. K. Aggarwal and Hari Prakash* (Narosa Publishing House) 1999 p 289.