


CURRICULUM VITAE OF PROFESSOR TANKESHWAR KUMAR

1. GENERAL INFORMATION			
Name	Professor (Dr.) Tankeshwar Kumar		
Designation	UGC Professor and Director Computer Centre (on leave)		
Gender	Male		
Category	General		
Address	Department of Physics, Panjab University, Chandigarh, UT/State : Chandigarh Pincode : 160014		
Date of Birth	October 17, 1963		
Nationality	Indian		
Email	tankesh@pu.ac.in , drtankeshwar@gmail.com		
Contact	Telephone : 01722534488 Mobile : 09815991816 0172, 2727563 (R)		
2. EDUCATION QUALIFICATION			
	Year	University Name	Subject / Topic of Specialization
Graduation	1983	Kurukshetra University	Physics Chemistry Maths
Post Graduation	1985	Panjab University Chandigarh	Physics
Ph.D	1990	Panjab University Chandigarh	Theoretical Solid State Physics
Post Doctorate	1991	ICTP, Trieste, Italy	Theoretical Solid State Physics
3. AREA OF SPECIALIZATION(Experience)			
<p>Condensed Matter Physics (28 years), Nanotechnology(7 years). Information Technology : e-Governance (9 years as Director). Education Administration (15 Years). Inspection, Accreditation and Assessments(8 years)</p>			
4. SERVICE DETAILS			
Posts	Institute Name	Years.Months of Experience	
Assistant Professor or Equivalent	H.P University, Shimla	1 Year 5 Months	
Assistant Professor or Equivalent	Panjab University, Physics Department	4 Years 7 Months	
Associate Professor or Equivalent	Panjab University, Physics Department	5 Years 8 Months	
Professor or Equivalent	Panjab University, Physics Department	9 Years 2 Months (continuing)	
5. NUMBER OF PERSONS GUIDED FOR Ph.D			
Ph.D			
Awarded	10	Under Progress	03

6. PUBLICATIONS

Numbers of Papers Published 129,

Citations: 521 (<http://scholar.google.co.in/citations?user=viMOoqQAAAAJ&hl=en>)

Experience: (23 years after Ph.D.)

- UGC Professor in Physics
- Director -Professor, Computer Center, Panjab University (Since 20th June 2005 to till date(on leave)
- Reader in Physics, Panjab University (Oct. 1999 – 19th June 2005)
- Lecturer in Physics, Panjab University, Chandigarh (Feb.1995 to Oct. 1999)
- Lecturer in Physics, H.P. University, Shimla (Sept.1993 to Feb.1995)
- Research Associate Panjab University (July 1992- Sept.1993)
- Post- Doctoral Fellow ICTP, Trieste, Italy (Jan. 1991 to Jan. 1992)

Administrative + Management Experience: 15 years.

Publications: International Papers in Journals/Articles: **76**
National Journals/proceedings etc.: **49**
Total: 129 (List attached))

Current Research specialization: Electron Correlations, Confined fluids,
Nanoscience,

Citations: Over 500 citations at International level.

Additional Information

Visits Abroad

- (1) July 1990 -Sept. 1990 ICTP, Italy
- (2) Jan. 1991 to Jan.1992 ICTP, Italy
- (3) July 1993 to Aug.1993 ICTP, Italy
- (4) July 1995 to Aug.1995 ICTP, Italy
- (5) June 1997 to Aug. 1997 ICTP, Italy
- (6) 22nd May 2002 to 10th July 2002, ICTP, Italy
- (7) May 2004 to July 2004, ICTP, Italy
- (8) 17th October, 2009 to 25th October 2009 ICTP, Italy
- (9) 5th September 2011 to 17th Sept. 2011, Wein University, Austria) and ICTP, Italy

Research Specialization:

- **Nanoscience**
- Liquid State Dynamics
- Computer Simulations and Modeling
- Electron Correlations
- Computer applications

Research Projects:

- (1) **Microdynamics of conducting Liquids**
Funded by CSIR for three years (1996-1999)
- (2) Minor research project by UGC on
Dynamical properties of electron fluids
- (3) Static and Dynamical Properties of Charged Quantum
Fluids. Funded by DST (2000 to 2004)

Other Projects

- (1) Executed gigabit and wi-fi project of the PU campus
- (2) Online Entrance test forms and admissions since 2011
- (3) Computer Incharge of Entrance tests (pre and Post
conduct) PU 2006-07.
- (4) Computer Incharge of admission of B.Ed (Punjab)
2006
- (5) Introduced dynamical website of PU, networking,
Intranet and Wi -Fi services at PU hostels.
- (6) Haryana Govt. online job website (consultancy)

Courses Taught:

- (1) Mathematical Physics (M.Sc)
- (2) Statistical Physics (M.Sc)
- (3) Computational Physics (M.Sc)
- (4) Electromagnetic Theory and General Theory of
Relativity (M.Sc)
- (5) Classical Electrodynamics (M.Sc)
- (6) Classical Mechanics (M.Sc)
- (7) Condensed Matter Physics (M.Sc)
- (8) Physics of Materials (B.Sc)
- (9) Scientific Computer Simulation (M.Tech: Nano
Science and Technology)
- (10) Computer Oriented numerical and Statistical Method
(M.C.A)

Courses Designed:

Computational Physics (M.Sc), Classical Electrodynamics
(M.Sc), Diploma in scientific computing, Scientific
Computation (M.Tech)
M.Tech: **Nano Science and Nano Technology**

Ph.D. Students**Awarded**

- (1) Dr Rajneesh Kumar (working in USA)
- (2) Dr. Raman Sharma (Professor and Head in H.P. Univ.)

- (3) Dr. Saroj K. Sharma (Asst. Professor in Engineering College)
- (4) Dr. Shaminder Singh (Asst. Professor in post graduate College)
- (5) Dr. Lalit Kumar Saini (Asst. Professor in NIT, Surat)
- (6) Dr. Ali Hossein Mohammad Zaheri (Asst. Prof. in in Iran)
- (7) Dr. Puneet Sharma (University of Waterloo, Canada)
- (8)) Dr. Rohan Kaushal (Asst. Professor in DAV College)
- (9) Dr. A.K.Paul, Scientist CSIO
- (10) Dr. Reena Dev, (Asst. Professor in DAV College)

Post- Doctoral Students: Dr. Rajinder Moudgil (Professor Kurukshetra Univ.)
Dr. Jyoti Sood (Lecturer, UIET, PU)

Membership/Coordinators: Life member of IPA, IAPT, PASC
UGC Infilibnet (Computer)
Supercomputing Facility at PU (Tifac)
Member syndicate (PU) (2002), (2006 upto May)
Member of Senate PU (2000-2004 and 2004-2006)
Member, Science Faculty (2000-06)
Member, Medical faculty (2004-06)
Member Board of Studies in Physics (2000-2002)
Member Academic Council, PU (2004-2006)
Member Board of Finance, PU (2005,06 upto May)
Member Research Promotion Committee and other committees of PU.
Member, Equivalence committee (2005-09)
Associate Dean at Punjab Technical University (4th Nov. 2003 to 18th December, 2003)
Member board of studies of Physics, Nanotechnology, Bioinformatics (PU), Library Sciences

Achievements/Awards

- (i) **FIRST UGC Professor in Physics Since 22nd July 2014**
- (ii) Awarded Associateship of ICTP, Italy from 1997- 2004
- (iii) Invited as Research Leader at Abdus Salam ICTP, Italy
- (iv) Awarded Vijay Shree Award (2005)
- (iv) Member editorial Board of World Journal of Condensed Matter Physics

Invited Lectures as Resource Person: >50 lectures

- (i) TTTI, Chandigarh, December 2000(4 lectures), 2001(4 lectures), 2002(4 lectures),
- (ii) Panjab University, Chandigarh, Refresher Courses, 2001(4 lectures) , 2002(4 lectures), 2004(1 lecture)
- (iii) Seminar on Computational Physics, 2002 (one lecture)
- (iv) Beant College of Engineering and Technology (15-19th March,2004) (2 lectures)
- (v) NTTTT, Chandigarh, Jan. 2005 (2 Lectures)
- (vi) National Conference on Emerging Computer Technology. 30th September, 2005
- (vii) NITTT, Chandigarh (Two lectures) 22nd December 2005
- (viii) Thapar Institute of Technology, Patiala 23rd December, 2005 (Two lectures)
- (ix) Refresher Course at DCSA, 21st December, 2005 (one lecture)
- (x) Refresher course in Computational Physics, March, 2006 (Two lectures)

- (xi) Conference on Recent Development in Condensed Matter Physics (1 lecture)
- (xii) Invited lecture DAE symposium, 2002 (one lecture)
- (xiii) National Seminar at Kakytia University, Warangal Feb. 2004 (one lecture)
- (xiv) Condensed Matter Group Seminar, July-2005, ICTP, ITALY (one Lecture)
- (xv) Nano and Novel Materials March 8-9,2006 (one Lecture)
- (xvi) Presided over a Seminar on Technologies of 21st Century.
- (xvii) Seminar on Nano science (29-30th March, 2007)
- (xviii) Nanotechnology and Computer, Extension Lecture at Guru Nanak Khalsa College, Ludhiana (2007)
- (xix) Numerical Methods for Computer, TTTI (2 Lectures) (2007)
- (xx) Facilities Computer Center, PU, at Refresher courses at PU (2007).
- (xxi) Fluid Flow at Nano- Channels, Pbi University (2008)
- (xxii) Fluid Flow in NanoChannel (TTTTI) (2008)
- (xxiii) Computer Simulations and Nano Technology (2008)Krukshetra, Summer School in physical Sciences)

- (xxiv) Computer Simulation in Physics (NITTT) 2008 (2 - Lectures
- (xxv) Refresher Course in IT (PU) 2008 (two Lectures)
- (xxvi) Extension Lecture : Nanoechnology and Computers 15th April, 2009 SVIET
- (xxvii) Two lectures on Computer Simulations and Nanotechnology. NIT Surat 3rd Sept. 2009
- (xxviii) Nanofluidics, DAV College Abohar.
- (xxix) PC Troubleshooting, Nano Technology and Computers. Refresher course in IT. (two lectures) 2009
- (xxx) PC Troubleshooting, Nano Technology and Computers. Refresher course in IT. (16th Sept., 2010)
- (xxxi) Challenges in Adopting ICT in Education (6th June, 2013) PU, Chandigarh
- (xxxii) Virtual Class room (7th June. 2013) PU, Chandigarh
- (xxxiii) ICT in education, DCSA 5th September, 2013.
- (xxxiv) PC troubleshooting

Research Publications **(Dr. Tankeshwar Kumar)**

Full Research Papers in Refereed Journals

1. Static and Dynamic effects of confinement on Diffusion (Reena Devi, Sunita Srivastava, K. Tankeshwar) *Phys. Chem. Liq* (2014) in press.
2. Longitudinal and Volume viscosity of fluid confined to nanochannel (Ishu Goyal, A.H. M Zaheri, Sunita Srivastava, and K. Tankeshwar) *Phys. Chem. Liq.* (2013).
3. Role of Triplet Correlations in anomalous self-diffusion coefficient (Gaganpreet, Sunita Srivastava, K. Tankeshwar) *Chem, Phys.* 2012.
4. Effect of Roughness of Confining Surface on Diffusive Motion of Fluid (K. Tankeshwar and Sunita Srivastava) *Micro Nano Systems*, **4**, 25-28 2012.
5. Mass dependence of Mutual Diffusion Coefficient: computer Simulation Study (Raman Sharma, K. Tankeshwar, S. Ranganthan) *Phys. Chem. Liq.* **49**, 206, 2011
6. Dynamics of fluids contained in Nano cube (Reena Devi, Sunita Srivastava, K. Tankeshwar) *Nano Biomedicine Engineering* **3** 47 (2011)
7. Flow of fluid in Nanotube with rectangular cross section (Reena Devi, Jyoti Sood, Sunita Srivastava and K. Tankeshwar) *Microfluidics and Nanofluidics*, 737, 2010
8. Effect of Mass on Shear Viscosity of Binary Fluid Mixture confined to Nanochannel (Roahn Kaushal, Sunita Srivastava and K. Tankeshwar) *Int. Journ. Nanosci.* **8** (2009)
9. Dynamics of gelling liquids: Algebraic Relaxation: Sunita Srivastava, CN Kumar, K. Tankeshwar *J. Phys: Condensed Matter* **21** 335106 (2009).
10. Longitudinal and Bulk Viscosities of Binary Fluid Mixture (AHM Zaheri, Sunita Srivastava, K. Tankeshwar) *Euro. Phys. Jour. B* (published 5th March 2008)
11. Dynamical model for restricted diffusion in Nano Channels (**K. Tankeshwar** and Sunita Srivastava) *Nanotechnology* **18** 485714 (2007)
12. Dynamical Structure Factor of Liquid Li, Na and Al, Shaminder Singh, Jyoti Sood and **K. Tankeshwar**, *J. Non. Cryst. Solid* **353**, 3134 (2007) .
13. Theoretical Evaluation of Bulk Viscosity : Relaxation Time (A.H.M. Zaheri, Sunita Srivastava, **K. Tankeshwar**) *Phys. Rev. E* **76** 041204 (2007)

14. Anisotropic Diffusion of a fluid confined to different geometries at nano-scale, Neha Aggarwal, Jyoti Sood and **K. Tankeshwar**, *Nanotechnology (UK)* **18** 335707 (2007)
15. 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 No 4 (2006) 1395-1401
16. Transport properties of expanded rubidium: Potential Dependence, Raman Sharma and K.Tankeshwar *Phys.Chem. Liq.* **44**, 387, (2006)
17. Many body Correlations versus mode-coupling effects in dynamics of dense gases Puneet Sharma and K.Tankeshwar, *Phys.Rev. E* **72**, 051204 (2005)
18. Dynamical Correlations in coupled electron-electron and electron hole quantum wire (L.K. Saini, **K.Tankeshwar**, and R.K. Moudgil) *Phys.Rev.B.* **70** 075302 (2004)
19. Reply to comments on “Collective density excitations in liquid Li,Na and Al” Shaminder Singh and **K. Tankeshwar** *Phys.Rev.E* **70**, 013202 (2004)
20. Role of Many body correlations in liquids, P. Sharma, **K.Tankeshwar**, K. N. Pathak and S.Ranganathan, *Phys.Rev. E* **70**, 051202, (2004)
21. Collective density excitations in liquid Li,Na and Al. ,Shaminder Singh and **K. Tankeshwar** *Phys.Rev.E* 012201 (2003)
22. Shear Viscosity of Binary Fluids: Mass Dependence, Rohan Kushal and **K. Tankeshwar** *Phys.Rev. E* 011201(2003)
23. Binary and Multiparticle Contributions to the Velocity autocorrelation function (Puneet Sharma, **K.Tankeshwar**, K.N. Pathak and S.Ranganathan) *Phys.Rev.E* 021202 (2003)
24. Derivation of Memory Function from Mori’s Equation (Shaminder Singh, Sunita Srivastava, C.N. Kumar and **K.Tankeshwar**) *Phys.Chem. Liq.* **41**, 567 (2003)
25. Longitudinal and bulk viscosity of expanded Rubidium (A.H. M. Zaher, Sunita Srivastava, **K.Tankeshwar**) *J.Phys.: Condens. Matter*, 6683 (2003)
26. Current Correlation Function of ideal Fermi Gas at Finite Temperature, .R.P. Kaur, **K.Tankeshwar**, and K.N. Pathak, *Parmana* 2002, 703-711
27. χ^2 (bt) form of the memory function, Shaminder Singh, C.N. Kumar and **K.Tankeshwar** *Modern Physics Letter B* **19** 739 (2002)

28. Wave Vector dependent shear viscosity of expanded Rb, Saroj K. Sharma and **K.Tankeshwar** Indian J.Phys. 47A 329 (2000).
29. Collective Modes in Liquid Metals, Saroj K. Sharma and **K. Tankeshwar** JPAS Vol.2, 289 (2000)
30. Self-diffusion in Isotopic Fluid, Raman Sharma, **K. Tankeshwar** and K. C. Sharma Phys.Rev. E **59** 460 (1999)
31. Estimation of Bulk Viscosity of Expanded Rb, Sunita Srivastava and **K.Tankeshwar**, Phys. Chem. Liq **37** 351 (1999)
32. Coupled Charged Bose Quantum Wires, R.K. Moudgil, **K.Tankeshwar** , K.N. Pathak and S.Ranganathan, J.Phys. Condensed Matter **11**, 3413 (1999).
33. A Molecular Dynamics Study of Cesium Along Vopur Pressure Curve, S. Ranganathan, **K. Tankeshwar** and K.N. Pathak, Phys.Chem.Liq. **37**, 237 (1999)
34. Ground State Correlations in a Charged Bose Quantum Wire, R.K.Moudgil , **K.Tankeshwar** and K.N.Pathak , J.Phys.:Condens. Matter **11** 4665 (1999).
35. 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)
36. Binary collision contribution to transverse current correlation function of dense fluids, Rajneesh K. Sharma, **K. Tankeshwar**, K.N.Pathak , S. Ranganathan and R.E. Johnson, *J.Chem.Phys.* **108**, 2919 (1998)
37. Inverse Shear Viscosity(fluidity) Scaled with melting point properties: Almost Universal Behaviour of Heavier Alkali Metals, **K.Tankeshwar** and N.H.March, Phys. Chem. Liq. (1998)
38. Dynamical Correlations in Charged Bose gas, **K.Tankeshwar**, B.Tanatar and M.P. Tosi, Phys.Rev.B **57** 8854 (1998)
39. Mutual Diffusion in Binary System Raman Sharma and **K.Tankeshwar** J.Chem.Phys. **108** 2601 (1998)
40. Binary collision contribution to longitudinal current correlation function of dense fluids- Numerical Results, K.N.Pathak , S. Ranganathan and R.E.Johnson, Rajneesh K. Sharma, **K.Tankeshwar** Phys. Rev. E. **57** 6195 (1998).
41. Propagation of collective modes in liquid cesium, Rajneesh K. Sharma and **K. Tankeshwar** *Phys.Rev.E* **55**, 564 (1997)

42. Static and Dynamical Properties of two dimensional charged bose fluid,
R.K.Moudgil, P.K.Ahluwalia, **K. Tankeshwar** and K.N.Pathak , *Phys.Rev.B* **55**
544 (1997)
43. 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 **55** 1550 (1997)
44. Ionic Diffusion in $K_x(KCl)_{(1-x)}$, Raman Sharma and **K. Tankeshwar** *J.Phys.:
Condensed Matter* **9**, 6191 (1997)
45. Shear Viscosity of Expanded Rubidium, Saroj K. Sharma and **K. Tankeshwar**
J.Phys: Condensed Matter **9** 6185 (1997)
46. Relation between electrical and thermal conductivity in charged condensed phases, **K.**
Tankeshwar , N.H.March, *Phys.Chem. Liq.* **31**, 39 (1996)
47. Model for self diffusion coefficient, Raman Sharma and **K. Tankeshwar** , *Phys.*
*Chem. Liq.***32** , 225 (1996)
48. Dynamical Structure factor of a two dimensional electron gas, R. K. Moudgil, P. K.
Ahluwalia and **K. Tankeshwar**, *Phys.Rev. B* **54** , 8809 (1996)
49. Time Correlation functions of classical fluids: A self consistent approach, Rajneesh
K.Sharma, R.K.Moudgil and **K.Tankeshwar**, *Phys.Rev. E* **54** 3652(1996)
50. Longitudinal and bulk viscosities of Lennard Jones fluids **K. Tankeshwar**,
K.N.Pathak and S.Ranganathan *J.Phys.: Condensed Matter* **8** , 10847(1996)
51. Self-diffusion coefficient of expanded rubidium, Saroj K. Sharma and **K.**
Tankeshwar *J.Phys.: Condensed Matter* **8**, 10839 (1996)
52. Binary collision contribution to transverse current correlation function, Rajneesh
K.Sharma, **K. Tankeshwar**, K.N.Pathak and S.Ranganathan, *Materials Science*
Fourum **223 -224** 23 (1996)
53. Realization of hyperbolic secant memory function, **K. Tankeshwar** and K.N.
Pathak, *J.Phys.:Condensed Matter* **7**, 5729 (1995)
54. Collective density excitation in liquid Cs, **K. Tankeshwar**, S. Ranganathan and
K.N.Pathak, *Phys. Chem. Liq.* **30**, 95 (1995)
55. Mass dependence of self diffusion in isotopic fluids, **K. Tankeshwar** , *J.Phys.*
:Condensed Matter **7** 9715 (1995)

56. Analytical solution of Mori's equation with hyperbolic secant memory, **K. Tankeshwar** and K.N.Pathak, *J.Phys.: condens. Matter* **6** , 591, (1994)
57. Generalized negative bulk viscosity of liquids, **K. Tankeshwar** , *J.Phys. Condens. Matter* **6** 9295 (1994)
58. Transport coefficient of classical dense fluids: A simple approach, Rajneesh K. Sharma, **K. Tankeshwar** and K.N. Pathak, *J.Phys.: Condensed Matter* **7**, 537 (1994)
59. Self diffusion coefficient and force auto correlation function, Rajneesh K. Sharma, **K. Tankeshwar** and K.N. Pathak, *Phys. Chem.Liq.* **29** 59 (1994)
60. Tracer diffusion in simple liquids, **K. Tankeshwar** and F. O. Kaddour, *J. Phys. : Condens. Matter* **4**, 3349(1992).
61. Theory of Chemla effect in Li(K)Cl, **K.Tankeshwar** and M.P.Tosi, *Solid State Communication* **84**, 1/2, 245(1992)
62. The deviation of pair potential from the potential of mean force in molten Na near Freezing, **K. Tankeshwar** and N.H.March, *Phys. Chem. Liq.*, **25** 59 (1992)
63. A simple model for the calculation of self diffusion, **K. Tankeshwar**, B. Singla and K.N.Pathak, *J. Phys. Condens. Matter*, **3**, 3173-3182(1991).
64. Self diffusion on isotopic fluids, **K.Tankeshwar**, *Phys. Chem. Liq.* **24**, 21(1991).
65. On the ionic equilibrium between complexes in molten fluoroaluminates, Z.Akdeniz, **K. Tankeshwar** and M.P. Tosi, *Phys. Chem Liq.* **23** , 259-263(1991).
66. Ionic diffusion in superionic-conductor melts, **K. Tankeshwar** and M.P.Tosi, *J.Phys. :Condensed Matter* **3**, 7511(1991).
67. Bulk viscosity and relations between transport coefficient, **K. Tankeshwar** *Phys. Chem. Liq.* **24**, 91(1991).
68. Ionic diffusion in the double layer at model electrode/molten salt interface, **K. Tankeshwar** and M.P.Tosi, *J. Phys. : Condens. Matter* **3**, 9817(1991).
69. Velocity auto-correlation function in 2-dimensional classical electron fluid, B.Singla, **K. Tankeshwar** and K.N. Pathak, *Phys.Rev. A* **41**, 4306-4311(1990).
70. Theory of transport coefficient of simple fluids, **K. Tankeshwar**, K.N.Pathak and S. Ranganathan, *J. Phys. : Condens. Matter* **2**, 5891-5905(1990).

71. Dynamical structure factor fluid Ar, **K. Tankeshwar**, K.N. Pathak and S. Ranganathan, *Phys. Chem. Liq.* **22**, 75-88(1990).
72. Energy current density correlation function -I Frequency sum rules, **K.Tankeshwar**, K.N. Pathak, and S. Ranganathan *J. Phys. : Condens. Matter* **1**, 6193-6202 (1989).
73. Energy current density correlation function-II Thermal Conductivity, **K. Tankeshwar**, K.N.Pathak, S. Ranganathan, *J. Phys. : Condens. Matter* **1**, 6193-6202 (1989).
74. Shear Viscosity of Lennard Jones fluids, **K.Tankeshwar**, K. N. Pathak, and S. Ranganathan, *J.Phys. C: Solid State Phys.*, **21**, 3607-3617 (1988).
75. Collective density excitations in liquid Aluminium, **K. Tankeshwar**, G.S.Dubey and K.N.Pathak, *J. Phys. C. : Solid State Phys.* **21** , L811-814(1988).
76. Self diffusion coefficient of Lennard Jones Fluids, **K.Tankeshwar** , K. N. Pathak and S. Ranganathan, *J. Phys. C: Solid State Phys.* **20**, 5749-5757 (1987).

Review Article/Articles in books

77. Restricted flow in Nano-Channels
(K. Tankeshwar, Computer Center, DCSA, Panjab University, Chandigarh-160014, India, Sunita Srivastava and Jyoti Sood, **Nanotechnology Research Progress**, Editor Julian F. Vogel and Felix T. Jung (Nova Publishers. New York, 2009)
78. Dynamical correlation function and transport coefficient of dense fluids, K.N.Pathak and **K. Tankeshwar** "Correlation in Electronic and Atomic Fluids" (Editors: P.Jena, R.Kalia, P.Vashishta and M.P.Tosi), World Scientific Press, (1990).
79. 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) 289 (1999).
80. Computer Simulations in Physics, **K. Tankeshwar** (Narosa Publishing House) edited by I.M.Govil and Rajeev K. Puri, 246 (2003)

Internal Reports

81. Bulk stress auto-correlation in simple liquids:-Sum rules, **K.Tankeshwar** Rajiv Bhandari and K.N.Pathak, ICTP report IC/90/314 (1990).
82. Collective Density Excitation in Liquid Sodium, Rajneesh K. Sharma, R.K. Moudgil, **K.Tankeshwar** , ICTP report IC/97/186 (1997)

83. Algebraic Relaxation of a Time Correlation Function (Sunita Srivastava, C N Kumar, and K.Tankeshwar) ICTP report (2004)

Papers presented at conferences/symposia

84. Effect of Electrically Charged Confinement on Diffusion of Ionic Fluid. Ishu Goyal, Sunita Srivastava and K. Tankeshwar *Int. Conf.in Conden. Matter and Nanomat.* (23-26 Feb. 2011)

85. Self Diffusion of fluid confined in a cylindrical nanotubes of different diameters. Reena Devi, Sunita Srivastava and K. Tankeshwar *Int. Conf.in Conden. Matter and Nanomat.* (23-26 Feb. 2011)

86. Anomalous behavior of Mori's coefficients for the Gaussian core Fluid. Gaganpreet, Sunita Srivastava and K. Tankeshwar. *Int. Conf.in Conden. Matter and Nanomat.* (23-26 Feb. 2011)

87. Collective dynamics of Liquid Potassium near melting point Ishu Goyal, Jyoti Sood, Sunita Srivastava and K Tankeshwar DAE Sym. 2010.

88. Dynamics of a fluid in a nanotube Reena Devi, Sunita Srivastava and K Tankeshwar. DAE sym. 2010.

89. Self –Diffusion of Fluid Flowing through Rectangular Nanochannel (Reena Devi, Sunita Srivastava and K. Tankeshwar) Proceeding 74th DAE Symp. Vol 54, 421 (2009) ISBN 818372054-4

90. Restricted Diffusion in Nano Channel in *Recent Advances in Innovative Materials* (Excel India Publishers) (2008).

91. Enhancement of shear viscosity in Nano channel (Sunita Srivastava and K. Tankeshwar) DAE Symp., Mysore (2007)

92. Anisotropic Diffusion in Nano-Channels, Neha Aggarwal, Jyoti Sood and K..Tankeshwar, DAE Solid State Physics Proc. 205 (2005)

93. Bulk Viscosity of two component fluids (A.H.M. Zaheri and **K. Tankeshwar**) NCMA-2004, Kurukshetra (2004)

94. Superposition approximation for static quadruplet Correlation function. (Puneet K. Sharma and **K.Tankeshwar**) NCMA-2004, Kurukshetra. (2004)

95. Multiparticle Contribution to force Autocorrelation (Puneet Sharma and **K.Tankeshwar**) DAE Symposium, (2003)
96. Dynamics of Molten Sodium: Memory Function Approach (Shaminder Singh , Jyoti Sood and **K.Tankeshwar**) DAE Symposium (2003)
97. Wigner Crystallization in coupled Electron-Hole Quantum wire systems L.K. Saini, **K.Tankeshwar** and R.K. Moudgil, DAE Symposium (2003).
98. Dynamical Response of Transverse Excitation in 3D electron Fluids **K. Tankeshwar**, R.K. Moudgil, and K.N. Pathak, DAE Symposium, Chandigarh, (2002)
99. Stress Correlation Function in binary liquid mixture, Rohan Kaushal and **K.Tankeshwar**, DAE Symposium, Chandigarh, (2002)
100. Effect of interaction potential on Shear Viscosity (Raman Sharma and **K.Tankeshwar**) DAE symposium, Chandigarh, (2002)
101. Effect of interaction potential on self diffusion coefficient, Raman Sharma and **K.Tankeshwar** National conference in Guahati (2001)
102. Shear Viscosity of Two-Component Fluids, Rohan Kaushal and **K.Tankeshwar** National Conference in Guahati (2001)
103. Transverse Current Correlation Function in Liquid Metal, Saroj K. Sharma and **K.Tankeshwar** , Conference on Recent Development in Disordered Material (2001), Published in 'Disordered Material' Narosa page 249 (2003)
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126. Analytical solution of Mori s equation, **K.Tankeshwar** and K.N.Pathak, Solid State Phys. Symp. India 31C, (1988).
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Summary of Research Publications/citations

International Journals

74

Journal Name	Number of Publications	Impact Factor
Physical Review (USA)	16	2.352
J.Phys: Condensed Matter (UK)	23	1.9
J.Chem. Phys. (USA)	02	3.149
Phys. Chem. Liq. (UK)	15	0.621
Nanotechnology (UK)	02	3.446
Solid State Communication (UK)	01	1.632
Mat. Sci. Forum (Germany)	01	0.399
Mod. Phys.Lett. B(Singapore)	01	0.471
Pramana (India)	01	0.274
Review Articles in books	03	
European Physical Journal B	01	0.608
Others	02	

Conference/Symposium/Internal reports etc.

49

Total number of publications:

129

Average Per Year Publications in International Journal >3



(Source: ISI of WEB,Google Scholar): h index =14, Citations >500

SPECIFIC RESEARCH CONTRIBUTION

The work done over nearly two decades makes distinct contributions to our understanding of atomic motions in liquids. Several exact sum rules have been derived for the dynamical correlation functions of momentum currents and energy current density fluctuations. These results have been used to make **acceptable predictions of the transport coefficients of classical fluids**. Mass and concentration dependence of transport properties in mixture of fluids has been studied to provide results in agreement with experimental results. One of the important contribution is to show that **self-diffusion of a massive tracer in a fluid has a limiting value which has been confirmed later on by group at University in UK**.

Binary collision contribution to the memory function of current correlation functions for a fluid, particles of which are interacting via continuous potential, is an important contribution to the development of complete microscopic theory for classical many body system. **A method has been developed to add systematically higher order terms of binary contribution to time correlation function**. It has been shown for the first time that Mode- Coupling contribution is one of the way of expressing contribution due to many body correlations.

A simple model for diffusion coefficient developed by us has been successfully applied by others and by us to systems like LJ fluids, Yukawa fluid, molten salt, Chemla mixture, super ionic conductors, inert liquid mixture and confined fluids.

Inclusion of dynamical correlations in many body theory of electron and Bose systems has brought theoretical results quite closer to experimental/computer simulation results.

Self-diffusion coefficients of a fluid confined to slab and cylindrical geometries at **nano-scale** with varying widths have been studied by considering different density profiles. It is shown that confinement to nano length scale results in anisotropic diffusion and the diffusion coefficient is directly dependent on the width of the channel and the density profile.

Recently we have developed a model for restricted diffusion in nano-channels. The model is built on the consideration that the confinement affects molecular motion. The model introduces the concept of microscopic (local) self-diffusion coefficient which varies as a function of distance from the walls of the channel. As one moves towards the confining walls the self diffusion coefficient decreases, affecting the fluidity of the fluid in a nano-channel. It has also been proved by proposing model that denser fluid provides an additional artificial wall which restricts the flow of fluid in a narrow channel. **Relevance of the work to the study of flow of fluid like blood in arteries has been found.**