# CURRICULUM VITAE

(Last updated on June 30, 2024)

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**3. Date of Birth:** January 7, 1965
**4. Academic qualification:**

B. Sc.(Physics)- University of Kalyani-1986
M. Sc.(Physics)- University of Kalyani-1988 (Exam. held in 1989)
Specialisation in M.Sc.: Solid State Physics.
PhD - Saha Institute of Nuclear Physics(Calcutta University)-1996
http://hdl.handle.net/10603/174353
Thesis title: *Responses of Ising and other dynamical systems to time varying perturbations.* Degree awarded by the University of Calcutta in 1996.

**National Scholarship:** Obtained National Scholarship (on the basis of the results of B.Sc. (Hons.) Exam, 1986) financed by the Ministry of Human Resource Developments, Government of India, in 1986.
**NET:** Obtained Junior Research Fellowship (JRF) through NET in 1990.

**5. Postdoctoral research positions held:**

(a) July 98-July 1999: Posdoctoral fellow, Department of Physics, Duisburg University, D-47048 Duisburg, Germany, financed by Graduiertenkolleg.

(b) July 97-June 98: Postdoctoral fellow, Institute for Theoretical Physics, University of Cologne, D-50923 Cologne, Germany, financed by Sonderforschungsbereich 341.

(c) July 96-April 97: Research Associate, Department of Physics, Indian Institute of Science, Bangalore-560012, India, funded by Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India.

**6(A). Teaching positions held:**

**A.** Krishnanagar Govt. College (1999-2006)
**B.** Presidency College (2006-2012)
**C.** Presidency University (2012-continuing)

**6(B). Teaching experiences:**

**A.** Advanced Computational Techniques, Advanced Techniques in Theoretical Physics, in Ph.D coursework.
**B.** Statistical Mechanics, Quantum Mechanics, Classical Electrodynamics, Advanced Condensed Matter Physics, Nonlinear dynamics, Numerical Analysis with programming (FORTRAN) in M.Sc. level.
**C.** Statistical Mechanics, Quantum mechanics, Thermodynamics, Electromagnetic theory, Optics, Advanced mechanics, Numerical Analysis with programming (FORTRAN), Elementary experiments in B.Sc. level.

**7(A). List of Publications (Peer reviewed):**

**www.scopus.com/authid/detail.uri?authorId=7003951569**
**scholar.google.co.in/citations?user=BsX4IMYAAAAJ&hl=en**

1. O. Mallick and M. Acharyya, **Critical behaviours of anisotropic XY ferromagnet in the presence of random field**, J. Magn. Magn. Mater. 599 (2024) 172084. https://doi.org/10.1016/j.jmmm.2024.172084

2. M. Acharyya and B. K. Chakrabarti, **Quantum Ising Heat Engines: A mean field study**, Eur. Phys. J. B, 97 (2024) 45.
https://doi.org/10.1140/epjb/s10051-024-00681-9

3. O. Mallick and M. Acharyya, **Phase transition in anisotropic XY ferromagnet with quenched nonmagnetic impurity**, Int. J. Mod. Phys. C, 35 (2024) 2450097.
https://doi.org/10.1142/S0129183124500979

4. S. Kundu and M. Acharyya, **Existence of two distinct time scales in the Fairen-Velarde model of bacterial respiration**, Int. J. Mod. Phys. C, 35 (2024) 2450094.
https://doi.org/10.1142/S0129183124500943

5. I. Tikader and M. Acharyya, **Relaxation behaviours in ferromagnetic monolayers**, 2024, Invited review article published in Comprehensive Materials Processing (Elsevier), 2E, Vol-4, (2024) Pages 508-524.
https://doi.org/10.1016/B978-0-323-96020-5.00112-6

6. O. Mallick and M. Acharyya, **Equilibrium and Nonequilibrium Phase transitions in continuous symmetric classical ferromagnets**, Invited review article published in Comprehensive Materials Processing (Elsevier) 2E, Vol-4, (2024) Pages 489-507.
https://doi.org/10.1016/B978-0-323-96020-5.00157-6

7. M. Naskar and M. Acharyya, **Theoretical studies on switching of magnetisation in thin film**, Invited review article published in Comprehensive Materials Processing (Elsevier), 2E, Vol-4, (2024) Pages 228-243.
https://doi.org/10.1016/B978-0-323-96020-5.00002-9

8. M. Naskar, M. Acharyya, E. Vatansever and N. G. Fytas, **Disorder effects on the metastability of classical Heisenberg ferromagnets**, Phys. Rev. E, **108** (2023) 014121.
https://doi.org/10.1103/PhysRevE.108.014121

9. O. Mallick and M. Acharyya, **Monte Carlo study of the phase transitions in the classical XY ferromagnets with random anisotropy**, Phase Transitions (Taylor and Francis), **96** (2023) 668-686.
https://doi.org/10.1080/01411594.2023.2246623

10. I. Tikader, O. Mallick and M. Acharyya, **Effects of geometry, boundary condition and dynamical rules on the magnetic relaxation of Ising ferromagnet**, Int. J. Mod. Phys. C, **34** (2023) 2350147.
https://doi.org/10.1142/S0129183123501474

11. S. Chatterjee and M. Acharyya, **Critical Slowing Down along the Separatrix of Lotka-Volterra Model of Competition**, Int. J. Mod. Phys. C, **34** (2023) 2350118.
https://doi.org/10.1142/S0129183123501188

12. A. B. Acharyya, M. Acharyya, E. Vatansever and N. G. Fytas, **Transient behavior of damage spreading in the two-dimensional Blume-Capel ferromagnet**, J. Stat. Phys. **190** (2023) 1.
https://doi.org/10.1007/s10955-022-03012-3

13. M. Acharyya and E. Vatansever, **Monte Carlo study of the phase diagram of layered XY antiferromagnet**, Physica A: Statistical mechanics and its Application (Elsevier) **605** (2022) 128018
https://doi.org/10.1016/j.physa.2022.128018

14. M. Acharyya, **Rodlike Heisenberg nanomagnet driven by propagating magnetic wave: Nonequilibrium phase transition**, Int. J. Mod. Phys. C (World Scientific), **33** (2022) 2250129 .
https://doi.org/10.1142/S0129183122501297

15. A. Datta and M. Acharyya, **Modelling the Spread of an Epidemic in Presence of Vaccination using Cellular Automata**, Int. J. Mod. Phys. C, **33** (2022)

2250094.
https://doi.org/10.1142/S0129183122500942

16. M. Naskar and M. Acharyya, **Competitive metastable behaviours of surface and bulk in Ising ferromagnet**, Eur. Phys. J. B **94** (2021) 140.
https://doi.org/10.1140/epjb/s10051-021-00158-z

17. M. Naskar, M. Acharyya, E. Vatansever and N. G. Fytas, **Metastable behavior of the spin-s Ising and Blume-Capel ferromagnets: A Monte Carlo study**, Phys. Rev. E **104** (2021) 014107.
https://doi.org/10.1103/PhysRevE.104.014107

18. M. Naskar and M. Acharyya, **Anisotropy driven reversal of magnetisation in Blume-Capel ferromagnet: A Monte Carlo study**, Eur. Phys. J. B **94** (2021) 36.
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19. M. Naskar and M. Acharyya, **Metastability in graded and step like variation of field and anisotropy in the Blume-Capel ferromagnet**, Physica A:Statistical Mechanics and its Applications (Elsevier), **568** (2021) 125747
https://doi.org/10.1016/j.physa.2021.125747

20. E. Vatansever and M. Acharyya, **Nonequilibrium Multiple Transitions in the Core-shell Ising Nanoparticles Driven by Randomly Varying Magnetic Fields**, Journal of Magnetism and Magnetic Materials (Elsevier), **527** (2021) 167721.
https://doi.org/10.1016/j.jmmm.2020.167721

21. T. Das and M. Acharyya, **Transient behaviour towards the stable limit cycle in the Selkov model of Glycolysis: A physiological disorder**, Physica A: Statistical Mechanics and its Applications (Elsevier) **567** (2021) 125684.
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22. M. Acharyya, **Role of anisotropy to the compensation in the Blume-Capel trilayered ferrimagnet**, Superlattice and Microstructures (Elsevier) **147** (2020) 106648. https://doi.org/10.1016/j.spmi.2020.106648

23. M. Naskar and M. Acharyya, **Effects of random fields on the reversal of magnetisation of Ising ferromagnet**, Physica A (Elsevier) **551** (2020) 124583.
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24. Sk. Sajid and M. Acharyya, **Compensation in site diluted spin-1/2 Ising ferrimagnet: A Monte Carlo study**, *Phase Transition* (Taylor and Francis) **93** (2020) 62-73. https://doi.org/10.1080/01411594.2019.1692016

25. A. Halder and M. Acharyya, **Universality Class of the Nonequilibrium Phase Transition in Two-Dimensional Ising Ferromagnet Driven by Propagating Magnetic Field Wave**, *Applied Mathematics*, **10** (2019) 568-577.
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26. S. Kayal and M. Acharyya, **Transient phases in the Vicsek model of flocking**, *Journal of Physics Through Computation*, **1** (2018) 17-30
https://doi.org/10.23977/jptc.2018.11003

27. R. Datta, M. Acharyya and A. Dhar, **Magnetisation reversal in Ising ferromagnet by thermal and field gradients**, *Heliyon (Elsevier)*, **4** (2018) e00892,
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31. M. Acharyya, **Spin flip statistics and spin wave interference patterns in Ising ferromagnetic films: A Monte Carlo study**, *Heliyon (Elsevier)* **3** (2017) e00357
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32. M. Acharyya and A. Halder, **Blume-Capel ferromagnet driven by propagating and standing magnetic field wave: Dynamical modes and nonequilibrium phase transition**, *J. Magn. Magn. Mater.*, **426** (2017) 53
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33. A. Dhar and M. Acharyya, **Reversal of magnetisation in Ising ferromagnet by the field having gradient**, *Commun. Theor. Phys. (IOP)*, **66** (2016) 563.

34. A. Banerjee and M. Acharyya, **Spatio-temporal dynamics of the Kuramoto-Sakaguchi model with time dependent connectivity**, *Phys. Rev. E*, **94** (2016) 022213

35. A. Halder and M. Acharyya, **Standing magnetic wave on Ising ferromagnet: Nonequilibrium phase transition**, *J. Magn. Magn. Mater.* 420 (2016) 290.

36. M. Acharyya, **Exit probability and first passage time of a lazy Pearson walker: Scaling behaviour**, *Applied Mathematics* **7** (2016) 1353.

37. M. Acharyya, **Model and statistical analysis of the motion of a tired random walker in continuum**, *Journal of Modern Physics* **6** (2015) 2021.

38. M. Acharyya, **Standing spin wave mode in RFIM: Patterns and athermal nonequilibrium phases**, *J. Magn. Magn. Mater.*, **394** (2015) 410.

39. M. Acharyya, **Ising metamagnet driven by propagating magnetic field wave: Nonequilibrium phases and transitions**, *J. Magn. Magn. Mater.*, **382** (2015) 206.

40. S. Ghosh, M. Acharyya, T. Majumder and A. Bagchi, **Metabolic signatures of oxidative stress and their relationship with erythrocyte membrane surface roughness among workers of manual materials handling (MMH)**, *North American Journal of Medical Sciences*, **77** (2015) 558

41. M. Acharyya, **Nucleation in Ising ferromagnet by a field spatially spreading in time**, *Physica A*, **403**, (2014) 94

42. M. Acharyya, **Dynamic Symmetry Breaking Breathing and Spreading Transitions in Ferromagnetic Film Irradiated by Spherical Electromagnetic Wave**, *J. Magn. Magn. Mater.*, **354**, (2014) 349

43. M. Acharyya, **Polarised electromagnetic wave propagation through the ferromagnet: Phase boundary of dynamic phase transition**, *Acta Physica Polonica B*, **45** (2014) 1027

44. M. Acharyya, **Random field Ising model swept by propagating magnetic field wave: Athermal nonequilibrium phase diagram**, *J. Magn. Magn. Mater.* **334** (2013) 11.

45. M. Acharyya, **Nonequilibrium phase transition in the kinetic Ising model: Absence of tricritical behaviour in presence of impurities**, *Acta Physica Polonica B*, **43** (2012) 2041.

46. A. B. Acharyya and M. Acharyya, **Bose - Einstein condensation in arbitrary dimensions**, *Acta Physica Polonica B*, **43** (2012) 1805

47. M. Acharyya, **Form invariant Sommerfeld electrical conductivity in generalised d - dimensions**, *Communications in Theoretical Physics*, **56** (2011) 943

48. M. Acharyya, **Nonequilibrium phase transition in the kinetic Ising model driven by propagating magnetic field wave**, *Physica Scripta*, **84** (2011) 035009

49. M. Acharyya, **Monte Carlo study of the dynamic phase transition in Ising metamagnet driven by oscillating magnetic field**, *Journal of Magnetism and Magnetic Materials*, **323** (2011) 2872

50. M. Acharyya, **Pauli spin paramagnetism and electronic specific heat in generalised d dimensions**, *Communications in Theoretical Physics*, **55** (2011) 901

51. M. Acharyya and A. B. Acharyya, **Evidence of invariance of time scale at critical point in the Ising meanfield equilibrium equation of state**, *Communications in Theoretical Physics*, **55** (2011) 1109

52. M. Acharyya, **Nonequilibrium Magnetisation reversal by periodic Impulsive fields in Ising meanfield dynamics**, *Physica Scripta*, **82** (2010) 065703

53. M. Acharyya, **Noninteracting fermions in infinite dimensions**, *European Journal of Physics*, **31** (2010) L89

54. M. Acharyya and A. B. Acharyya, **Critical Slowing down along the dynamic phase boundary in Ising meanfield dynamics**, *Int. J. Mod. Phys.* C, **21** (2010) 481

55. M. Acharyya and A. B. Acharyya, **Inflection point as a manifestation of tricritical point on the dynamic phase boundary in Ising meanfield dynamics**, *Communications in Computational Physics*, **3** (2008) 397

56. M. Acharyya, **Nonequilibrium multicritical behavior in anisotropic Heisenberg ferromagnet driven by oscillating magnetic field**, *Int. J. Mod. Phys.* C, **17** (2006) 1107

57. M. Acharyya, **Nonequilibrium Phase Transitions in model ferromagnets: A review**, *Int. J. Mod. Phys.* C, **16** (2005) 1631

58. M. Acharyya, **Multiple dynamic phase transitions in anisotropic Heisenberg ferromagnet driven by polarised magnetic field**, *Phys. Rev. E*, **69** (2004) 027105

59. M. Acharyya and A. B. Acharyya, **Modelling and computer simulation of an insurance policy: A search for maximum profit**, *Int. J. Mod. Phys.* C, 14 (2003) 1041

60. M. Acharyya, **Axial and off axial dynamic transitions in uniaxially anisotropic Heisenberg ferromagnet: A comparison**, *Int. J. Mod. Phys.* C, 14 (2003) 49

61. M. Acharyya, **Off-axial symmetry breaking in uniaxially anisotropic Heisenberg ferromagnet**, *Int. J. Mod. Phys.* C, 12 (2001) 709

62. M. Acharyya, A. Basu, R. Pandit & S. Ramaswamy, **Inequivalence of Dynamical Ensembles in a Generalised Driven Diffusive Lattice Gas**, *Phys. Rev. E*, 61 (2000) 1139

63. M. Acharyya, U. Nowak and K. D. Usadel, **Transverse ordering of an antiferromagnet in a field with oblique angle to the easy axis**, *Phys. Rev. B*, 61 (2000) 464

64. B. K. Chakrabarti and M. Acharyya, **Dynamic transitions and Hysteresis**, *Rev. Mod. Phys.*, **71**, (1999) 847

65. M. Acharyya, **Nonequilibrium phase transition in the kinetic Ising model: Existence of tricritical point and stochastic resonance**, *Phys. Rev. E*, **59** (1999) 218

66. M. Acharyya and D. Stauffer, **Effects of boundary conditions on the critical spanning probability**, *Int. J. Mod. Phys.* C, **9** (1998) 643

67. M. Acharyya, **Nonequilibrium phase transition in the kinetic Ising model: Is transition point the maximum lossy point ?**, *Phys. Rev. E*, **58** (1998) 179

68. M. Acharyya, **Nonequilibrium phase transition in the kinetic Ising Model: Dynamical symmetry breaking by randomly varying magnetic field**, *Phys. Rev. E*, **58** (1998) 174

69. M. Acharyya and D. Stauffer, **Nucleation and hysteresis in Ising model: Classical theory versus computer simulation**, *European Physical Journal B*, **5** (1998) 571; Erratum EPJB, **7** (1999) 169

70. M. Acharyya, **Comparisons of meanfield and Monte Carlo approaches to dynamic hysteresis in Ising ferromagnets**, *Physica A*, **253** (1998) 199

71. S. S. Mandal and M. Acharyya, **Specific heat in the integer quantum Hall effect: An exact diagonalization approach**, *Physica B*, **252** (1998) 91

72. M. Acharyya, **Zero temperature dynamic transition in the random field Ising model: A Monte Carlo study**, *Physica A*, **252** (1998) 151 do not have any conflict of interest

73. M. Acharyya, **Nonequilibrium phase transition in the kinetic Ising model: Critical slowing down and specific-heat singularity**, *Phys. Rev. E*, **56** (1997) 2407

74. M. Acharyya, **Nonequilibrium phase transition in the kinetic Ising model: Divergences of fluctuations and responses near the transition point**, *Phys. Rev. E*, **56** (1997) 1234

75. M. Acharyya, J. K. Bhattacharjee and B. K. Chakrabarti, **Dynamic Response of Ising System to a Pulsed field**, *Phys. Rev. E*, **55** (1997) 2392

76. M. Acharyya, **Nonequilibrium phase transition and 'specific-heat' singularity in the kinetic Ising model: A Monte Carlo study**, *Physica A*, **235** (1997) 469

77. M. Acharyya and B. K. Chakrabarti, **Response of random dielectric composites and earthquake models to pulses: Prediction possibilities** *Physica A*, **224** (1996) 254

78. M. Acharyya and B. K. Chakrabarti, **Growth of breakdown susceptibility in random composites and stick-slip model of earthquakes: Prediction of breakdown voltage and other catastrophes**, *Phys. Rev. E*, **53** (1996) 140; Erratum, *Phys. Rev. E*, **54** (1996) 2174

79. M. Acharyya and B. K. Chakrabarti, **Growth of breakdown susceptibility in random composites and in BTW model: Prediction of dielectric breakdown and other catastrophes**, *Ind. J. Phys. A* **69** (1995) 205

80. M. Acharyya and B. K. Chakrabarti, **Response of Ising systems to oscillating and pulsed fields: Hysteresis, ac and pulsed susceptibility**, *Phys. Rev. B*, **52** (1995) 6550

81. M. Acharyya and B. K. Chakrabarti, **Study of response to pulses and possible prediction of catastrophes**, *J. Phys. I (France)*, **5** (1995) 153

82. M. Acharyya and B. K. Chakrabarti, **Ising system in oscillating field: Hysteretic response**, in *Annual reviews of computational physics*, Ed. D. Stauffer, (World Scientific, Singapore), Vol. **1** (1994) 107

83. M. Acharyya and B. K. Chakrabarti, **AC susceptibility and hysteresis in Ising magnets**, *J. Mag. Mag. Mat.*, **136** (1994) L29

84. M. Acharyya, B. K. Chakrabarti and R. B. Stinchcombe, **Hysteresis in Ising model in transverse field**, *J. Phys. A: Math. Gen.*, **27**, (1994) 1533

85. M. Acharyya and B. K. Chakrabarti, **Magnetic hysteresis loops as Lissajous plots of relaxationally delayed response to periodic field variation**, *Physica A*, **202** (1994) 467

86. M. Acharyya, **Structural properties of planar random heap of hard discs**, *J. Phys. I (France)*, **3** (1993) 905 ; Erratum, *J. Phys. I (France)*, **3** (1993) 2123

87. M. Acharyya and B. K. Chakrabarti, **Monte Carlo study of hysteretic response and relaxation in Ising models**, *Physica A*, **192** (1993) 471

88. B. K. Chakrabarti and M. Acharyya, **Instabilities in a sandpile under vibration**, *J. Phys. I (France)*, **2** (1992) 389

**7(B). Publications in Conference proceedings:**

89. M. Acharyya, *Patterns, dynamics and phase transitions in Ising ferromagnet driven by magnetic field wave* in the **STATPHYS-VIII**, held at SNBNCBS, Kolkata, India, December 1-5, 2014. Invited lecture materials published in *Journal of Physics: Conference Series (IOP)* **638** (2015) 012008. (DOI:10.1088/1742-6596/638/1/012008)

90. M. Acharyya, U. Nowak and K. D. Usadel, *Phase diagram of a classical anisotropic Heisenberg antiferromagnet in a field*, in Conference proceeding, *Structure and Dynamics of Heterogeneous systems* Eds. P. Entel and D. E. Wolf, World-Scientific, (1999) pp 317.

91. M. Acharyya, P. Ray and B. K. Chakrabarti, *Cluster Statistics in Dielectric Breakdown*, *Physica A* (Elsevier), **224** (1996) 287

92. M. Acharyya, B. K. Chakrabarti and A. K. Sen, *Monte Carlo study of the hysteretic response of two dimensional Ising system: Scaling behaviour*, *Physica A* (Elsevier), **186** (1992) 231

**8(A). Editorship of International Research Journals:**

1. **Joint Editor-in-Chief**, *Journal of Physics Through Computation*, Clausius Scientific Press, Ottawa, Canada. A peer reviewed, Scopus indexed International Research Journal (**ISSN:2617-1163**).
**www.clausiuspress.com/journal/JPTC/editorialBoard.html**

**8(B). Editorial Board Membership of International Journals:**

1. Associate Editor of the Journal *Frontiers in Physics*
(**ISSN:2296-424X**)
(**www.frontiersin.org/journals/physics/sections/interdisciplinary-physics**)

**9. Reviewer of research projects/papers (names of the Journals):**

**Project proposals:**

1. **Reviewed one Proposal of Project (National Science Foundation, USA) in 2000**
2. **Reviewed one Proposal of Project (US-Israel Binational Science Foundation) in 2015**

**Journals:**

1. Europhysics Letters (IOP)
2. Journal of Magnetism and Magnetic Materials (Elsevier)
3. Physics Letters A (Elsevier) **(outstanding reviewer 2017)**
4. Physica A (Elsevier) **(outstanding reviewer 2017)**
5. Physica B (Elsevier)
6. Phase Transitions (Taylor and Francis)
7. Chemical Physics letters (Elsevier) **(outstanding reviewer 2016)**
8. Journal of Theoretical Biology (Elsevier) **(outstanding reviewer 2017)**
9. European Physical Journal B (Springer)
10. Physical Review E (APS)
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**10. A partial list of citations of my work :**

1. Wooszyn M. Conformity and Mass Media Influence in the Sznajd Model on Regular Lattices. Entropy. 2024 Mar 30;26(4):307.
2. M. Quintana and A. Berger, Phys. Rev. Lett. **131**(2023) 116701
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9. T. Bar et al., Phys. Rev. Lett. **121** (2018) 045701
10. E. Vatansever and N. G. Fytas, Phys. Rev. E **97** (2018) 012122
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13. S. Kumar et. al. Phys. Rev. E **93** (2016) 010402(R)
14. K. Binder and P. Virnau, J. Chem. Phys. **145** (2016) 211701
15. M. Lino et al, Phys. Rev. E. **92** (2015) 012916
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22. E. Machado et al. Phys. Rev. E **71** (2005) 016120
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34. Zhong Fan and Zhang Jinxiu, Phys. Rev. Lett., **75** (1995) 2027
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45. D. Bose and S. Sarkar, Phys. Rev. E **56** (1997) 6581

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48. Vehnkamaki and Ford, Phys. Rev. E, **59** (1999) 6483

49. P. B. Thomas and D. Dhar, J. Phys. A, **26** (1993) 3973

50. B. Daviren et al, JMMM, **321** (2009) 1787

## 11. Citations of my works in books:

1. *A Kinetic view in Statistical Physics*, P M Krapivsky, S Redner and E Ben-Naim, 2010, Cambridge University Press.

2. *Domains in ferroic crystals and thin films*, A K Tagantsev, L E Cross and J Fousek, 2010, Springer.

3. *Quantum Ising phases and transitions in transverse Ising models*, S Suzuki, J Inoue and B K Chakrabarti, 2012, Springer.

## 12. Invited/Contributed talks:

(1) Invited lecture: Faculty Development Programme, Department of Physics, Amity University, Kolkata, on 25th June, 2024. Title: Phase transition and pitchfork bifurcations.

(2)Contributed talk: 9th Indian Statistical Physics Community Meeting, April 3-5, 2024, ICTS, Bangalore. Title: Nonequilibrium tricritical behaviour in anisotropic XY ferromagnet
https://www.youtube.com/watch?v=U2lYw7wYI-U

(3) Invited lecture, India-Turkey binational online conference, On 22nd November, 2023
Title: Metastability of the spin-s model ferromagnets.

(4) Invited lecture, Department of Physics, NIT Meghlaya, 8th May, 2023,
Title: Ferromagnetic phase transition as supercritical pitchfork bifurcation.

(5) Invited lecture, Department of Physics, Sikkim University, 3rd March 2023,
Title: Ferromagnetic phase transition as supercritical pitchfork bifurcation.

(6) Invited lecture, "2nd National Physics meet", Department of Physics, University of Kalyani, February, 17-18, 2023. Title: Transient behaviour towards the stable limit cycle in the Selkov model of Glycolysis.

(7)Contributed talk: 8th Indian Statistical Physics Community Meeting, February 1-3, 2023, ICTS, Bangalore. Title: Metastabe behaviour of spin-S Ising and Blume-Capel ferromagnets
https://www.youtube.com/watch?v=s5ElCR7qEMo

(8) Invited lecture, Department of Physics, Dokuz Eylul University, Izmir, Turkey, November 30, 2022, Title:Phase transitions in XY model with random anisotropy.

(9) Invited lecture: Frontiers of Physics-2021, Department of Physics, APC college, New Barrackpore, Kolkata, 6th July, 2021. Title: Selkov model of Glycolysis.

(10) Invited lecture: In Weekly Colloquium Series, Department of Physics, Presidency University, Kolkata, on 13th January, 2021. Title: Nonequilibrium response of driven ferromagnet.

(11) Invited lecture: In a State level Webinar organised by Government General Degree College at Kalna-1, WB, on 6th September, 2020. Title: Can phase transition be visualized as bifurcation ?

(12) Invited lecture: In an International Webinar organised by the Department of Physics, Mahisadal Raj College, WB, on 12th August, 2020 Title: Ferromagnetic phase transition as supercritical pitchfork bifurcation.

(13) Invited lecture: In a state level Webinar organised by the Department of Physics, Nabadwip Vidyasagar College, West Bengal, on 25th June, 2020. Title: Why don't we think differently ? Elementary dynamics and Fermat's principle.

(14) Invited lecture: In DBT sponsored seminar, at Moulana Azad College, Kolkata, on 28th February, 2020. Title: Physics through computer simulatiion.

(15) Invited lecture: In DBT sponsored programme, at Moulana Azad College, Kolkata, on 28.02.2019. Title: Amazing features of nonlinear world.

(16) Contibuted talk: In Indian Statistical Physics Community Meeting (ISPCM2019) held at ICTS, Bangalore, February 14-16, 2019. Title of the talk was *Driven XY ferromagnet: Nonequilibrium behaviours.*
https://www.youtube.com/watch?v=P1nlbgKsS-k

(17) Invited talk: In the National workshop "Expanding Horizon in Physics (EHP-2019)" held at Vidyasagar University, West Bengal, January 16-22, 2019. Title of the talk: *The story of driven ferromagnet.*

(18) Invited talk: In the "National Seminar on Current Trends in Computational Physics" (NSCTCP-2015), held at the Department of Physics, University of Gour Banga, Malda on 17th May, 2015. Title of the talk:*Nonequilibrium patterns and Phases in Driven Ising Ferromagnet.* www.ugb.ac.in/seminar-conference/

(19) Contributed talk: In a national conference, *Indian Statistical Physics Community meeting 2015*, held at Indian Institute of Science, Bangalore, in February 13-15, 2015. Title of the talk:*Nonequilibrium patterns and phases in RFIM at T=0.*
(www.icts.res.in/discussion-meeting/ISPC2015)

(20) Invited talk: In an international conference, STATPHYS-VIII, held at S N Bose Centre, Kolkata, in December, 1-5, 2014. Title: *Patterns, dynamics and phase transitions in Ising ferromagnet driven by magnetic field wave*
newweb.bose.res.in/Conferences/STATPHYSKOLKATAVIII

(21) Invited talk: At IACS, Kolkata on 17.09.2014. Title: *Patterns, Dynamics and phase transition in ferromagnetic film irradiated by EM wave*
iacs.res.in/seminars.html

(22) Invited talk: In a national conference, CMDAYS14 (27.08.2014-29.08.2014) held at CRNN, Calcutta University, Kolkata, with title *EM wave propagation through the ferromagnetic film: Nonequilibrium Phase Transition.*
http://cmdays.iopb.res.in

(23) Contributed talk: Department of Physics, Indian Institute of Science, Bangalore, February, 2014, contributed as a speaker in the Indian Statistical Physics Community Meeting (2014). Title of the talk was *Breathing and Spreading transitions in Ising ferromagnet* www.icts.res.in/discussion-meeting/ISPC2014

(24) Invited talk: S N Bose National Centre for Basic Sciences, Kolkata, on 19th 2013, invited as a Colloquium speaker with title, *Dynamic symmetry breaking breathing and spreading transitions in ferromagnetic film irradiated by spherical electromagnetic wave.*

(25) Invited talk: Department of Physics, Jadavpur University, *Ferromagnetic transition and Statistical Mechanics*, a set of two lectures delivered (on 14th and 15th December,2012), as an Invited Resource Person , in the Refresher course (3.12.2012-22.12.2012) organised by UGC Academic Staff college, Jadavpur University, Calcutta, India.

**13. Conference organised**

1. Organized (Joint Convener) India-Turkey Binational Online Conference on 22nd November, 2023.

2. Organized (Joint Convener) Internatinal Conference on Statistical and Computational Physics, ICSCP-2022, February 28- March 1, 2022 at University of Gour Banga, Malda, India Youtube link of video of Day-1 and Day-2
https://youtu.be/bkie9poEedc
https://youtu.be/rsuR4LnGKeI

3. Organised (Joint Secretary) the 10th International conference on Statistical STATPHYS-KOLKATA-X, during November 26-29, 2019 at Presidency University, Kolkata.
https://sites.google.com/site/statphyskolkatax/

4. Organised (Joint convener) the International Webinar on Condensed Matter Physics, 22nd July, 2020, Department of Physics, Presidency University.
https://youtu.be/SlBxJaH-h4s

5. Organised (Joint Convener) the International Webinar on Nanomagnetism, 10th August, 2020, Department of Physics and IQAC, Presidency University.
https://youtu.be/ledZdlSmIOQ

6. Organised (Joint Convener) the International Webinar on Statistical Physics, 23rd August, 2020, Department of Physics and IQAC, Presidency University.
https://youtu.be/f7iuc_K1YWo

7. Organised (Joint Convener) the International Webinar on Statistical Physics, 30th August, 2020, Department of Physics and IQAC, Presidency University.
https://youtu.be/6qIV2DVpxIU

8. Organised (Joint Convener) the International Webinar on Remote Sensing, 15th September, 2020, Department of Physics and IQAC, Presidency University, Kolkata.
https://youtu.be/Hw0Q5gZ-9No

9. Organised (Joint Convener) the International Webinar on Statistical Physics, 27th September, 2020, Department of Physics and IQAC, Presidency University.
https://youtu.be/v-9puXbL8PU

10. Organised (Joint Convener) the International Webinar on Experimental Statistical Physics, 15th October, 2020, Department of Physics, Presidency University.
https://youtu.be/MQoy4xWxjBw

11. Organised (Joint Convener) the International Webinar on Statistical Physics, 19th February, 2021, Department of Physics, Presidency University.
https://youtu.be/1Hz3hI2p7AU

12. Organised (Joint Convener) the National Webinar on Statistical Physics, 2nd April, 2021, Department of Physics, Presidency University.
https://youtu.be/EmZ81NbOeyQ

**14. Research interests:**

1. Metastability in model ferromagnets.
2. Interference of spin waves.
3. Behaviours of driven systems.
4. Random walk.
5. Biological applications of Nonlinear dynamics.
6. Behaviours of active matter.
7. Compensation in magnetic models.
8. Model Nanomagnetism.
9. Kinetics of magnetic relaxation.
10. Phase transitions in continuous symmetric spin models.

**15. My coauthors/collaborators:**

Bikas Chakrabarti (SINP, Calcutta), Rahul Pandit (IISC, Bangalore), Sriram Ramaswamy (IISC, Bangalore), Sudhangsu Mandal (IIT, Kharagpur), Jayanta Bhattacharjee (IACS, Kolkata), Dietrich Stauffer (Cologne University, Germany), Robin Stinchcombe

(Oxford University, UK), Ulrich Nowak (Konstanz University, Germany), Klaus Usadel (Duisburg University, Germany), Ajanta Bhowal Acharyya (Lady Brabourne College, Calcutta), Abhik Basu (SINP, Calcutta), Ashok Sen (SINP, Calcutta), Purushottam Ray (IMSC, Chennai), Amitava Banerjee (Presidency University), Ajay Halder (Presidency University, Kolkata), Abyaya Dhar (IIT, Kharagpur), Jayeeta Chattopadhyay (IISc, Bangalore), Ranajay Dutta (Hyderabad University), Sayantani Kayal (TCIS, Hyderabad), Sk. Sajid (PU), Moumita Naskar (PU), Tanmay Das (Government college, Kalna), Erol Vatansever(Dökuz Eylul University, Turkey), Nikolaos G. Fytas (Coventry University, UK), Agniva Datta (PU), Sauvik Chatterjee (PU), Ishita Tikader (PU), Olivia Mallick (PU), Soumyadeep Kundu (PU).

**16. Ph.D Supervision :**

1. Ajay Halder–Awarded in January, 2020.
Title:*Nonequilibrium Phase transition in ferromagnetic model systems*
http://hdl.handle.net/10603/277344

2. Moumita Naskar–Awarded in September, 2022.
Title:*Statistical studies of metastable lifetimes in magnetic model systems*
http://hdl.handle.net/10603/405764

3. Olivia Mallick (Ongoing, Joined in November 2021)

4. Ishita Tikader (Ongoing, Joined in November 2021)

**17. Projects supervised:**

**(A) B.Sc. Projects:**

1. Rohit Ahmed Mandal (2024): *Game theory and Nash equilibrium*

2. Soumyadeep Kundu (2022): *Revisiting Josephson effect through nonlinear dynamics.*

3. Pritam Manna (2021): *A Monte Carlo Study of Compensation in Trilayered XY model*

4. Sourjya Bhattacharjee (2020): *Random matrices and the distribution of arrival times in New York city subway system*

5. Kuntal Pramanik (2018): *Bak-Tang-Weisenfeld model with probabilistic directional flow.*

6. Suman Pramanick (2018): *Onset of avalanches in BTW model of self organised criticality*

7. Sk. Sajid (2018): *Compensation transition and thermodynamics of S-1/2 Ising trilayer system. Results published in Phase Transition 93 (2020) 62*

8. Ranajay Dutta (2017): *Magnetisation reversal in presence of thermal gradient only and the simultaneous presence of thermal and field gradient. Results published in Heliyon 4 (2018) e00892*

9. Shreya Kumbhakar (2017): *Can we expect mobility edge in one dimensional systems for incommensurate potential ?*

10. Pronobesh Maity (2017): *Role of dimensionality in Classical and Quantum many body systems.*

11. Samudra Sur (2017): *Creation of new level-differences in quantum systems using random perturbations.*

12. Amitava Banerjee (2016): *Collective dynamics of coupled nonlinear oscillators, Published in Phys. Rev. E. 94 (2016) 022213*

**(B) M.Sc. Projects:**

1. Soumyadeep Kundu (2024): *Fairen-Velarde model of bacterial respiration: existence of limit cycle.* Published in Int. J. Mod. Phys. C (2024) https://doi.org/10.1142/S0129183124500943

2. Poulami Sadhukhan (2023): *From Ising (1925) to Hopfield (1982): Journey to model the Artificial Intelligence of pattern recognition.*

3. Sabina Yasmin (2023): *Becker-Döring theory of nucleation: Simulations wth different algorithms.*

4. Harekrishna Bhunia (2022): *Computational study of three dimensional Ising ferromagnet and it's metastable behaviour.*

5. Sonali Saha (2022): *Selkov model of Glycolysis*

6. Suchandra Roy (2022): *Nash equilibria in Game theory: Social impact*

7. Agniva Datta (2021): *Modelling the Spread of an Epidemic in presence of vaccination using cellular automata* Published in Int. J. Mod. Phys. C (world scientific) 33 (2022) 2250095. https://doi.org/10.1142/S0129183122500942

8. Disha Roy (2021): *First Order Phase Transition as Subcritical Pitchfork Bifurcation*

9. Pradipta Mandal (2021): *The compensation in ferrimagnetic trilayer*

10. Arindam Das (2020): *Bacterial motion and Langevin equation*

11. Aritra Krishna De (2019): *Effects of nonmagnetic impurities on the reversal of ferromagnets*

12. Sayantani Kayal (2018): *Studies on the transient phases in the Vicsek model of flocking.* Published in *Journal of Physics Through Computation,* **1** *(2018) 17.* DOI:10.23977/jptc.2018.11003

13. Maneesha Ghosh (2017): *Theoretical analysis of ferromagnetic hysteresis*

14. Abyaya Dhar (2016): *Nucleation in Ising ferromagnet by a field having gradient.* Published in *Communications in Theoretical Physics (IOP)* **66** *2016 563*

15. Jayeeta Chatterjee (2016): *Tired walk and projected diffusion from higher dimensional random walk.* Published in Applied Mathematics **9** (2018) 602.

16. Santanu Dey (2015):*Statistics of droplet size in nucleating Ising ferromagnet*

17. Sukanta Chowdhury (2015):*Monte Carlo study on the effects of speed breaker and traffic signal in Nagel-Schrekenberg model of freeway traffic*

18. Rajit Thakur (2014): *Olami-Feder-Christensen automata model of earthquake for dissipative inhomogeneous system*

19. Tanmoy Biswas (2014): *The Olami-Feder-Christensen automaton model of earthquake for dissipative and homogeneous system*

20. Suraka Bhattacharyya (2014): *Classical nucleation in Ising ferromagnet in the coalescence regime*

21. Poulami Roy (2014): *Study of classical nucleation in single droplet regime*

22. Arijit Das (2013): *Dynamic phase transition of an Ising ferromagnet: A mean field approach*

23. Nepal Banerjee (2013): *Ferromagnetic phase transition in Ising model studied by Monte Carlo simulation*

**18. Administrative experiencess:**

1. Head of the Department (July 1, 2019- December 2, 2020)
2. Member of CAS (Career Advancement Scheme) subcommittee of Presidency University.
3. External member of BOS, DRAC etc.