Curriculum Vitae

PERSONAL DETAILS

Name	Manoj Kumar
Date of birth	June 26, 1987
Place of birth	Panipat, Haryana
Nationality	India
Telephone	+49-15211908410
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Current Address	Dittesstr. 1, 09126 Chemnitz, Germany.
Permanent Address	House No. 72, Krishna Nagar, New Model Town, Jatal Road, Panipat (Haryana)-132103, INDIA.

EDUCATION

July, 2001 – June, 2002	High School "Matriculation Examination", Board of School Education Haryana, India. Marks: 429/600 (71.5%)
June, 2003 – May, 2004	Senior Secondary School Examination, Board of School Education Haryana, India. Marks: 345/500 (69%)
July, 2004 – June, 2007	Bachelor of Science (Physics, Chemistry, & Mathematics), Kurukshetra University, Haryana, India. Marks: 1148/1450 (79.17%)
July, 2007 – July, 2009	Master of Science (Physics), Department of Physics & Astrophysics, University of Delhi, India. Project title: *SODAR Using 8051 Microcontroller* Marks: 726/1000 (72.6%)
July, 2009 – July, 2011	Master of Technology (Applied Optics), Indian Institute of Technology Delhi, India. Thesis title: *Studies in Optical Design*; Supervisor: Prof. Anurag Sharma Overall CGPA: 8.95/10 (89.5%)

DOCTORAL STUDIES

July, 2011 – May, 2018	Doctor of Philosophy (Physics), School of Physical Sciences (SPS), Jawaharlal Nehru University (JNU), New Delhi, India. Thesis Title: *Disordered Spin Systems: Ground States and Ordering Kinetics* Supervisor: Prof. Sanjay Puri (JNU), Co-Supervisor: Prof. Varsha Banerjee (IIT Delhi) Pre. PhD course-work CGPA: 8.28/9 Date of thesis submission: July 21, 2017 Date of viva voce: April 25, 2018 Date of award: May 25, 2018

ADDITIONAL COURSEWORK/TRAINING PROGRAMS

- Two semester courses on *English for Academic Purposes and Basic Communication Skills*
  Winter semester (Jan-May) 2012, Monsoon semester (Jul - Dec) 2013, Grade: A
  Linguistic Empowerment Cell, JNU, New Delhi.
- Summer intensive course on *Probability & Statistics, Statistical methods, Optimization algorithms and their applications*
  Mathematical & Computational Empowerment Cell, SCSS JNU, New Delhi (June 20 - July 19, 2013).

OTHER QUALIFICATIONS

GATE (AIR; 28); CSIR-UGC test for NET and JRF (AIR: 10); JEST (AIR:39).

PROFESSIONAL EXPERIENCE

Apr, 2018 – Mar, 2019	Postdoctoral Fellow, International Centre for Theoretical Sciences (ICTS), Tata Institute of Fundamental Research (TIFR), Bengaluru, Karnataka, 560089, INDIA.
Mar, 2019 - May, 2021	The Royal Society - SERB Newton International Fellow, Centre for Fluid and Complex Systems, Coventry University, CV1 5FB, England.
since Jun, 2021	Postdoctoral Research Assistant, Institute of Physics, Chemnitz University of Technology, 09126, Chemnitz, Germany.

TEACHING EXPERIENCE

Course Title	University	Level	Type
Engineering Physics labs	IIT Delhi	Undergraduate	Experiments
Topics in Classical & Quantum Mechanics	SPS, JNU	Pre PhD	tutorial
Quantum Field Theory	SPS, JNU	MSc	tutorial
Statistical Physics	SPS, JNU	MSc	tutorial
Phase Transitions and Critical Phenomena	SPS, JNU	Pre PhD	tutorial

PRIZES AND FELLOWSHIPS

Jul, 2007 – Jun, 2009	National Scholarship of Centre for Advanced Study in Physics, University of Delhi, India.
Jul, 2009 – Dec, 2009	GATE Fellowship of MHRD, India.
Jan, 2010 – Dec, 2011	Junior Research Fellowship of CSIR, New Delhi, India.
Jan, 2012 – Dec, 2014	Senior Research Fellowship of CSIR, New Delhi, India.
Apr, 2018 – Mar, 2019	Postdoctoral Research Fellowship of ICTS-TIFR, Bangaluru, India.
Mar, 2019 – May, 2021	Newton International Fellowship of the Royal Society, UK and SERB, India.

REFEREEING ACTIVITIES

since Aug, 2020	Referee for Journal of Statistical Mechanics: Theory and Experiment

ADMINISTRATIVE EXPERIENCE

Jul 2013 – Mar 2018 Administrator and Superuser of the High Performance Computing Cluster at SPS, JNU.

SCIENTIFIC EXPERIENCE AND COMPUTING SKILLS

- systems with slow dynamics, disordered and complex spin systems
- non-equilibrium phenomena in disordered systems, coarsening and domain growth
- optimisation problems in statistical physics, combinatorial optimisation techniques for energy minimization, graph cut method
- experience in computer simulation methods: Monte-Carlo and Molecular dynamics
- statistical data analysis: jackknife method, Xmgrace, gnuplot
- programming in C/C++, Fortran
- large-scale numerical Simulations, Parallel Computing (Open MPI)

RESEARCH INTERESTS

Statistical physics, Disordered or random spin systems, Out-of-equilibrium systems, Phase transitions and critical phenomena, ground states, Phase ordering kinetics, Aging and relaxation phenomena, Heat transport phenomena.

PUBLICATIONS

1. G.P. Shrivastav, **M. Kumar**, V. Banerjee, and S. Puri, *Ground-state morphologies in the random-field Ising model: scaling properties and non-Porod behavior*, Phys. Rev. E **90**, 032140 (2014).
2. **M. Kumar**, V. Banerjee, and S. Puri, *Random field Ising model with conserved kinetics: superuniversality violation, logarithmic growth law and the generalized Tomita sum rule*, EPL **117**, 10012 (2017).
3. F. Corberi, **M. Kumar**, S. Puri, and E. Lippiello, *Equilibrium structure and off-equilibrium kinetics of a magnet with tunable frustration*, Phys. Rev. E **95**, 062136 (2017).
4. **M. Kumar**, S. Chatterjee, R. Paul, and S. Puri, *Ordering kinetics in the random-bond XY model*, Phys. Rev. E **96**, 042127 (2017).
5. **M. Kumar**, V. Banerjee, and S. Puri, *Random field Ising model in a uniform magnetic field: ground states, pinned clusters and scaling laws*, Euro. Phys. J. E **40**, 96 (2017).
6. A Bupathy, **M. Kumar**, V. Banerjee, and S. Puri, *Random field Ising models: fractal interfaces and their implications*, J. Phys: Conf. Ser. **905**, 012025 (2017).
7. **M. Kumar**, R. Kumar, M. Weigel, V. Banerjee, W. Janke, and S. Puri, *Approximate ground states of the random-field Potts model from graph cuts*, Phys. Rev. E **97**, 053307 (2018).
8. F. Corberi, **M. Kumar**, E. Lippiello, and S. Puri, *Effects of frustration on fluctuation-dissipation relations*, Phys. Rev. E **99**, 012131 (2019).
9. **M. Kumar**, F. Corberi, E. Lippiello, and S. Puri, *Growth kinetics and aging phenomena in a frustrated system*, Eur. Phys. J. B **93**, 88 (2020).
10. **M. Kumar**, A. Kundu, M. Kulkarni, D. A. Huse, and A. Dhar, *Transport, correlations, and chaos in a classical disordered anharmonic chain*, Phys. Rev. E **102**, 0122130 (2020).
11. **M. Kumar** and C. Dasgupta, *Nonequilibrium phase transition in an Ising model without detailed balance*, Phys. Rev. E **102**, 052111 (2020).
12. F. Corberi, A. Iannone, **M. Kumar**, E. Lippiello, and P. Politi, *Coexistence of coarsening and mean field relaxation in the long-range Ising chain*, SciPost Phys. **10**, 109 (2021).
13. R. Agrawal, **M. Kumar**, and S. Puri, *Domain growth and aging in the random-field XY model: A monte-carlo study*, Phys. Rev. E **104**, 044123 (2021).

14. **M. Kumar** and M. Weigel, *On the comparison of optimization algorithms for the random-field Potts model*, J. Phys: Conf. Ser. **2241**, 012003 (2022).

TALKS/SEMINARS

1. An online Seminar on "Critical aspects in three-dimensional random-field systems"
   JNCASR, Bengaluru, INDIA (March 30, 2022).
2. A talk on "Ordering in Disordered Systems" in an online symposium on Current Trends in Nonequilibrium Physical (CTNEP 2021)
   SPS, JNU, New Delhi, INDIA (November 22-26, 2021).
3. An online seminar on "Nonequilibrium phase transition in an Ising model without detailed balance" in Nortida Soft-Matter seminar series (February 2, 2021).
4. A talk on "Critical behavior and approximate ground states in the random-field Potts model via graph cuts" in *20^{th} International NTZ-Workshop on New Developments in Computational Physics (ComPhys19)*
   University of Leipzig, Germany (November 28-30, 2019).
5. A talk on "Random-field Potts model: Approximate ground states and critical behavior"
   in *XXXI IUPAP Conference on Computational Physics (CCP 2019)*
   The Chinese University of Hong Kong, China (July 28 - August 1, 2019).
6. A talk on "Transport in a classical disordered nonlinear system"
   in *Indian Statistical Physics Community Meeting*
   ICTS-TIFR, Bengaluru, INDIA (February 14 - 16, 2019).
7. A seminar on "Ordering in disordered systems"
   ICTS-TIFR, Bengaluru, INDIA (October 11, 2018).
8. A poster and a talk on "Ordering in a disordered magnet with tunable frustration"
   in the program on *Entropy, Information, and order in Soft Matter*
   ICTS-TIFR, Bengaluru, INDIA (August 27 - November 02 , 2018).
9. A talk on "Random field Ising model in an external magnetic field"
   in a DST-UKIERI Workshop on *Pattern Dynamics in Complex Systems*
   IIT Delhi, INDIA (January 17 - 18, 2018).
10. A talk on "Random field Ising model in the absence and presence of a uniform magnetic field: Ground states, Scaling properties and non-Porod behavior"
    ICTS-TIFR, Bengaluru, India (December 20, 2017).
11. A talk on "The Driven Random Field Ising Model: Interfaces, textures and Scaling Laws"
    at the *Applied Mathematics Research Centre*
    Coventry University, United Kingdom (November 24, 2015).

POSTER PRESENTATIONS

1. An online Poster on "Criticality in three-dimensional three-state random-field Potts model"
   in *35th Annual CSP Workshop on Recent Developments in Computer Simulation Studies in Condensed Matter Physics*
   Center for Simulational Physics, The University of Georgia, USA (February 21-24, 2022 – online).
2. A Poster on "Critical properties of the three-dimensional three-state random-field Potts model"
   in *XXXII IUPAP Conference on Computational Physics (CCP 2021)*
   Coventry University, UK (August 1-5, 2021).

3. A poster on "Ordering in a disordered magnet with tunable frustration"
   in *The 2nd Asia Pacific Workshop on Quantum Magnetism*
   ICTS-TIFR, Bengaluru, INDIA (November 29 - December 07, 2018).
4. A poster on "The Driven Random Field Ising Model: Interfaces, Textures and Scaling Laws"
   in a conference on *Growing Length Scale Phenomena in Condensed Matter Physics*
   JNCASR, Bangalore, India (October 8 - 10, 2015).

SCHOOLS/WORKSHOPS/SYMPOSIA PARTICIPATION

1. ICTP Workshop on *Current Trends in Frustrated Magnetism*
   JNU, New Delhi (February 9-13, 2015).
2. Workshop on *Computational Material Science*
   SPS, JNU, New Delhi (March 3-5, 2014).
3. Bangalore School on *Statistical Physics*
   RRI, Bangalore (March 31-April 12, 2014).
4. A Symposium on *Physics of Soft Condensed Matter*
   SPS, JNU, New Delhi (March 10, 2014).
5. Symposium on *Complex Systems: From Physics to Biology*
   SPS & SCIS, JNU, New Delhi (October 15-16, 2013).
6. RRI School on *Statistical Physics*
   RRI, Bangalore (April 01-13, 2013).
7. March Meeting 2013 on *Nanoscience and Condensed Matter Interface*
   SPS, JNU, New Delhi (March 7-8, 2013).
8. Conference on *Condensed Matter and Biological Systems-2013 (CCMB13)*
   BHU, Varanasi (January 11-14, 2013).
9. DST-SERC School on *Non-Linear Dynamics*
   SNBNCBS, Kolkata (November 30-December 22, 2012).
10. National Conference on *Nonlinear Systems and Dynamics (NCNSD)*
    IISER, Pune (July 12-15, 2012).