1 Curriculum Vitae

1.1 Personal information

Name	**Kingshuk Ghosh**
Position:	Associate Professor Department of Physics and Astronomy, University of Denver
Home Address:	1001 E Bayaud Avenue, Apt 705, Denver, CO 80209 Voice: (415) 286-3458 http://portfolio.du.edu/kghosh email: kghosh@du.edu
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1.2 Education and training

- Ph.D. February 2003, Physics, University of Massachusetts, Amherst, MA, U.S.A.
  Thesis adviser: Professor M. Muthukumar
  Thesis title: Ordering and self-assembly in charged macromolecular systems.
- M.S. 2003, Physics, University of Massachusetts, Amherst, MA, U.S.A.
- M.S. 1997, Physics, Indian Institute of Technology, Kanpur, India.

1.3 Professional experience

- University of Denver, Department of Physics and Astronomy
  Associate Professor (September 2013-Present)
- University of Denver, Department of Physics and Astronomy
  Assistant Professor (September 2008-August 2013)
- Director, Molecular and Cellular Biophysics graduate program (June 2010-June 2012)
- University of California, San Francisco. Department of Pharmaceutical Chemistry.
  Visiting Post-doctoral Scholar (December 2002-August 2008)
  Supervisor: Professor Ken A. Dill
- University of Massachusetts, Amherst. Department of Polymer Science and Engineering.
  Research Assistant (May 1998 - December 2002).
- University of Massachusetts, Amherst. Department of Physics.
  Teaching Assistant (September 1997 - May 1998).
- Indian Association for the Cultivation of Science, Calcutta, India.
  Theoretical Physics Division (May - July 1996, 1997).

- Saha Institute of Nuclear Physics, Calcutta, India.
  Theory division (May - July 1995,96).

1.4 Publications

1. Convergence of molecular dynamics simulation of protein native states: feasibility vs self-consistency dilemma. L Sawle and **K. Ghosh**, *J. Chem. Theory. Comput.* **12**, 861-869 (2016).

2. A theoretical method to compute configurational properties in charged polymers and proteins. L. Sawle and **K. Ghosh**, *J. Chem. Phys.* **143**, 085101 (2015).

3. Reply to C. Tsallis' Conceptual Inadequacy of the Shore and Johnson Axioms for wide classes of complex systems. S. Presse, **K. Ghosh**, J. Lee and K.A. Dill, *Entropy* **17**, 5043 (2015).

4. Proteome folding kinetics is limited by protein halflife. T. Zou, N. Williams, S.B. Ozkan and **K. Ghosh**, *Plos One*: DOI: 10.1371/journal.pone.0112701 (2014).

5. Tsallis and other nonadditive entropies introduce biases not warranted by the data. S Presse, **K. Ghosh**, J. Lee and Ken A. Dill *Phys. Rev. Lett.* **111** 180604 (2013).

6. Competition enhances stochasticity in biochemical reactions. Taylor Firman and **K. Ghosh** *J. Chem. Phys.* **139** 121915 (2013) *invited article for the special issue of chemical physics in biological systems.*

7. Principles of maximum entropy and maximum caliber in statistical physics. Steve Press, **K. Ghosh**, Julian Lee, and Ken A. Dill *Rev. Mod. Phys.* **85** 1115 (2013) *invited contribution.*

8. Inhrent properties of adenylosuccinate lyase could explain S-Ado/SAICAr ratio due to homozygous R426H and R303C mutations. S.P. Ray, N. Duval, T.G. Wilkinson II, S.E. Shaheen, **K. Ghosh** and D. Patterson Biochemica et Biophysica Acta Proteins and Proteomics 1834: 1510 (2013)

9. Why and how does native topology dictate the folding speed of a protein? M. Rustad and **K. Ghosh** *J. Chem. Phys.* **137** 205104 (2012)

10. Structural and Biochemical Characterization of Human Adenylosuccinate Lyase (ADSL) and the R303C ADSL Deficiency-Associated Mutation. S. P. Ray, M. K. Deaton, G. C. Capodagli, L.A.F. Calkins, L. Sawle, **K. Ghosh**, D. Patterson, and S. D. Pegan *Biochemistry* **51**, 6701-6713 (2012).

11. Markov processes follow from the principle of maximum caliber. H. Ge, S. Presse, **K. Ghosh** and K.A. Dill *J. Chem. Phys.* **136** 064108 (2012).

12. Physical limits of cells and proteomes. K.A. Dill, **K. Ghosh** and J.D. Schmit *Proc. Natl. Acad. Sci.* **108**, 17876-17882 (2011).

13. Evidence of Multiple Folding Pathways for the Villin Headpiece Subdomain. L. Zhu, **K. Ghosh**, M. King, T. Cellmer, O. Bakajin and L.J. Lapidus *J. Phys. Chem B.* **115** 12632-12637 (2011).

14. Modeling stochastic dynamics in biochemical systems with feedback using Maximum Caliber. S. Presse, **K. Ghosh** and K.A. Dill *J Phys. Chem. B* **115** 6202 (2011).

15. What Drives Amyloid Molecules To Assemble into Oligomers and Fibrils? J. D. Schmit, **K. Ghosh** and K. A. Dill *Biophysical Journal* **100**, 450 (2011).

16. How do thermophilic proteins and proteomes withstand high temperature? L. sawle, **K. Ghosh** *Biophysical Journal* **101** (2011)

17. Stochastic dynamics of complexation reaction in the limit of small numbers. **K. Ghosh** *J. Chem. Phys.* **134**, 195101 (2011)

18. Dynamical fluctuations in biochemical reactions and cycles. S. Presse, **K. Ghosh**, R. Phillips and K. A. Dill. *Phys Rev E* **82**, 031905 (2010).

19. Cellular proteomes have broad distributions of protein stability. **K. Ghosh** and K.A. Dill *Biophysical Journal* **99**, 3996-4002 (2010)

20. Computing protein stabilities from their chain lengths **K. Ghosh** and K. A. Dill. *Proc. Natl. Acad. Sci.* **106(26)**, 10649-10654 (2009)

21. Theory for protein folding cooperativity: helix-bundles. **K. Ghosh** and K. A. Dill, *J. Am. Chem. Soc.*, **131(6)**, 2306 (2009)

22. Trajectory approach to two-state kinetics of single particles on sculpted energy landscapes. D. Wu, **K. Ghosh**, M. Inamdar, H. J. Lee, S. Fraser, K. A. Dill and R. Phillips. *Phys. Rev. Lett.* **103**, 050603 (2009).

23. Maximum caliber: A variational approach applied to two-state dynamics. G. Stock, **K. Ghosh** and Ken. A. Dill, *J. Chem Phys.*, **128**, 194102 (2008).

24. The ultimate speed limit to protein folding is conformational searching. **K. Ghosh**, S. B. Ozkan and K. A. Dill, *J. Am. Chem. Soc.*, **129**, 11920 (2007).

25. Measuring Flux Distribution in the Small-Numbers Limit. E. Seitaridou, M. M. Inamdar, R. Phillips, **K. Ghosh**, K. A. Dill, *J. Phys. Chem B*, **111**, 2288 (2007).

26. Teaching the Principles of Statistical Dynamics. **K. Ghosh**, K. Dill, M. N. Inamdar, E. Seitaridou and R. Phillips, *Am. J. Phys.*, **74**, 123-133 (2006).

27. Triple Points in Solutions of Polydisperse Semiflexible Polymers. **K. Ghosh** and M. Muthukumar, *Phys. Rev. Lett.*, **91**, 158303 (2003).

28. Polyelectrolyte solutions with added salt: A simulation study. S. Liu, **K. Ghosh** and M. Muthukumar, *J. Chem. Phys.*, **119**, 1813 (2003).

29. Phase Transitions in Solutions of Semiflexible Polyelectrolytes. **K. Ghosh**, Gustavo A. Carri and M. Muthukumar, *J. Chem. Phys.*, **116**,5299 (2002).

30. Scattering Properties of a Single Semiflexible Polyelectrolyte. **K. Ghosh**, M. Muthukumar, *J. Polym. Sci. B. Polymer Physics*, **39**, 2644 (2001).

31. Configurational properties of a single semiflexible polyelectrolyte. **K. Ghosh**, Gustavo A. Carri and M. Muthukumar, *J. Chem. Phys.*, **115**, 4367 (2001).

32. The random field Ising model In a transverse field: multicritical point. **K. Ghosh**, J. K. Bhattacharjee, *Phys Lett A*, **238**, 203 (1998).

33. Field theoretical calculation of the specific heat exponent for a classical N-vector model in a random external field. **K. Ghosh**, A. Dutta, J.K. Bhattacharjee, *Eur. Phys. J. B*, **4**, 219 (1998).

34. Saha Ionization Equation. **K. Ghosh**, G. Ghosh , *Eur. J. Phys.*, **19**, 7 (1998).

35. Distributions of time-headways in a particle-hopping model of vehicular traffic. **K. Ghosh**, A. Majumdar, D. Chowdhury, *Phys. Rev. E*, **58**, 4012 (1998).

36. Particle-hopping models of vehicular traffic: Distributions of distance headways and distance between jams. D. Chowdhury, **K. Ghosh**, A. Majumdar, S. Sinha, R.B. Stinchcombe , *Physica A*, **246**, 471 (1997).

1.4.1 Invited presentations

This is a list of invited presentations only and does not include solicited presentations.

- Colorado State University, Department of Physics, February 2016
- Mathematical Biosciences Institute (Ohio State University), workshop on Modeling and inference from single molecules to cells, February 2016
- University of Zurich, Department of Biochemistry, September 2015
- Telluride workshop on The Complexity of Dynamics and Kinetics from Single Molecules to Cells, June 2015
- Protein folding consortium meeting, Berkeley, May 2015
- Indian Institute of Technology, Mumbai, August 2014
- Gordon Research Conference, Protein Folding Dynamics, Galveston, January 2014
- Oregon Health Science University, Dept of Biochemistry and Molecular Biology, Portland, June 2013
- Protein folding consortium meeting, Berkeley, June 2013
- Cottrell Scholar Award presentation, Tucson, July 2012
- Protein folding consortium meeting, Stony Brook, June 2012
- Ribosome assisted folding, Lausanne, Switzerland May 2012
- University of Colorado, Denver Anschutz Campus, October 2011
- Gordon Research Conference, Stochastic Physics in Biology, Ventura January 2011
- Telluride workshop on Proteins, June 2010
- Arizona State University, Arizona, Dept of Physics, March 2010
- University of Arizona, Tucson, Dept of Applied Mathematics, October 2009
- Gordon Research Conference, Proteins, New Hampshire, June 2009
- Genentech, California, August 2009
- Academica Sinica, Taiwan, Dept of Physics, February 2008
- National Central University, Taiwan Dept of Physics, February 2008
- National University of Singapore, Singapore, Dept of Physics, Januray 2008
- University of Denver, Dept of Physics and Astronomy, January 2008
- Mt Holyoke College, Massachusetts, Dept of Physics, November 2007
- Bose Institute, Calcutta, India, June 2008
- Saint Mary's College, California, Dept. of Mathematics, May 2007
- University of California, Berkeley, Dept. of Physics, April 2007
- University of California, Los Angeles, Dept. of Biomathematics, April 2007
- Purdue University, West Lafayette, Dept. of Physics, February 2007
- University of California, Irvine, Dept of Chemistry, February 2007

1.4.2 Awards, Honors

1. NSF Career award
2. Cottrell Scholar Award from Research Corporation for Science Advancement
3. Scialog fellow

1.4.3 Membership

1. Permanent member of the Protein Folding Consortium sponsored by the National Science Foundation. Membership to this network is by invitation only.