



Saikat Banerjee

Personal Data

Date of Birth September 08, 1985
Place of Birth Kolkata, India
Current Address Room T4/103, Max Planck Institute for Biophysical Chemistry,
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Nationality Indian
Languages Bengali (native), Hindi (fluent), English (fluent), German (conversational)

Experience

Research

2015 – **Research Associate**, *Max Planck Institute for Biophysical Chemistry, Göttingen.*
Developing Bayesian methods for integrating GWAS and eQTL data, developing methods for detecting trans-eQTLs, new approaches for sparse regression
2014 – 2015 **Research Associate**, *Indian Institute of Science, Bangalore.*
Understanding the origin of long-range hydrophobic force; Role of biological water in the hydration shell of proteins

Miscellaneous

2010 – 2015 **HPC Admin**, *Bagchi Group, IISc, Bangalore.*
Administration and maintenance of in-house Linux-based HPC system
2012 – 2013 **Co-founder**, *Beejig, Bangalore.*
Beejig used to develop Android apps for business owners / store retailers to promote word-of-mouth marketing. Currently defunct.

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1/6

Education

- 2009 – 2014 **Ph.D, Indian Institute of Science, Bangalore.**
- Advisor: Prof. Biman Bagchi
 - Thesis title: Hydrophobicity and composition-dependent anomalies in aqueous binary mixtures, along with some contribution to diffusion on rugged energy landscape
 - Awarded on: March 28, 2015
- 2007 – 2009 **M.S. Chemistry, Indian Institute of Science, Bangalore.**
- Advisor: Prof. Biman Bagchi
 - Thesis title: Computer simulation of model systems: Diffusion in a rough potential & ripples in graphene
 - CGPA (Cumulative Grade Point Average): 6.9 / 8.0
 - Class Rank: 2nd
- 2004 – 2007 **B.Sc. (Honors), Ramakrishna Mission Vidyamandira, Belur Math (under University of Calcutta).**
- Subjects: Major in chemistry, with physics and mathematics as auxiliary subjects
 - Marks: 78% in chemistry (first class)
 - University rank: 1st

Awards and distinctions

- Jan, 2015 Best Poster Award | Faraday Discussions FD177, Royal Society of Chemistry
- Dec, 2009 Best Poster Award | Frontier Meeting in Chemical Biology
- 2007 Gold Medal, University of Calcutta | For securing 1st position in B.Sc. Chemistry Honors at the university
- 2004 National Merit Scholarship, Govt. of India | For securing 167th serial no. in the merit list of candidates appearing in 10+2 examination, WBBHSE
- 2002 National Merit Scholarship, Govt. of India | For securing 23rd rank among the candidates appearing in Secondary Examination, WBCSE

Invited talks

- 2017 **Advanced seminar on statistical genetics, Georg August Universität, Göttingen.**
- Invited by: Dr. Henner Simianer
 - Date: January 27, 2017
 - Title: A novel Bayesian method for prediction of disease risk of individuals and finemapping causal variants in GWAS

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2/6

Publications





- 1 Bayesian multiple logistic regression for case-control GWAS
SAIKAT BANERJEE, LINGYAO ZENG, HERIBERT SCHUNKERT AND JOHANNES SÖDING
[PLOS Genetics](#), DOI:10.1371/journal.pgen.1007856 (2018)
- 2 Study of distance dependence of hydrophobic force between two graphene-like walls and a signature of pressure induced structure formation in the confined water
TUHIN SAMANTA, RAJIB BISWAS, SAIKAT BANERJEE AND BIMAN BAGCHI
[The Journal of Chemical Physics](#), **149**, 044502 (2018)
- 3 Orientational order as the origin of the long-range hydrophobic effect
SAIKAT BANERJEE, RAKESH S. SINGH AND BIMAN BAGCHI
[The Journal of Chemical Physics](#), **142**, 134505 (2015)
- 4 Composition dependent non-ideality in aqueous binary mixtures as a signature of avoided spinodal decomposition
SARMISTHA SARKAR, SAIKAT BANERJEE, SUSMITA ROY, RIKHIA GHOSH, PARTHA PRATIM RAY AND BIMAN BAGCHI
[Journal of Chemical Sciences](#), 127:49 (2015) [Cover Article]
- 5 Sensitivity of polarization fluctuations to the nature of protein-water interactions: Study of biological water in four different protein-water systems
RIKHIA GHOSH, SAIKAT BANERJEE, MILAN HAZRA, SUSMITA ROY AND BIMAN BAGCHI
[The Journal of Chemical Physics](#), **141**, 22D531 (2014)
- 6 Spatio-temporal correlations in aqueous systems: Computational studies of static and dynamic heterogeneity by 2D-IR spectroscopy
BIMAN BAGCHI, RIKHIA GHOSH, TUHIN SAMANTA, SAIKAT BANERJEE AND RAJIB BISWAS
[Faraday Discussions](#), **FD177**, DOI:10.1039/C4FD00201F (2014)
- 7 Diffusion on a rugged energy landscape with spatial correlation
SAIKAT BANERJEE, RAJIB BISWAS, KAZUHIKO SEKI AND BIMAN BAGCHI
[The Journal of Chemical Physics](#), **141**, 124105 (2014)
- 8 Stability of fluctuating and transient aggregates of amphiphilic solutes in aqueous binary mixtures: Studies of dimethyl sulfoxide, ethanol, and tert-butyl alcohol
SAIKAT BANERJEE AND BIMAN BAGCHI
[The Journal of Chemical Physics](#), **139**, 164301 (2013)

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3/6

- 9 Fluctuating micro-heterogeneity in water–tert-butyl alcohol mixtures and lambda-type divergence of the mean cluster size with phase transition-like multiple anomalies
 SAIKAT BANERJEE, JONATHAN FURTADO AND BIMAN BAGCHI
 *The Journal of Chemical Physics*, **140**, 194502 (2014) [Featured Article]
- 10 Structural transformations, composition anomalies and a dramatic collapse of linear polymer chains in dilute ethanol–water mixtures
 SAIKAT BANERJEE, RIKHIA GHOSH, AND BIMAN BAGCHI
 *The Journal of Physical Chemistry B*, **116**, 3713–3722 (2012)
- 11 Anomalous behavior of linear hydrocarbon chains in water–DMSO binary mixture at low DMSO concentration
 RIKHIA GHOSH, SAIKAT BANERJEE, SUMAN CHAKRABARTY, AND BIMAN BAGCHI
 *The Journal of Physical Chemistry B*, **115**, 7612–7620 (2011)
- 12 Theoretical and computational analysis of static and dynamic anomalies in water–DMSO binary mixture at low DMSO concentrations
 SUSMITA ROY, SAIKAT BANERJEE AND BIMAN BAGCHI
 *The Journal of Physical Chemistry B*, **115**, 685–692 (2011)
- 13 Enhanced pair hydrophobicity in the water–dimethyl sulfoxide (DMSO) binary mixture at low DMSO concentrations
 SAIKAT BANERJEE, SUSMITA ROY AND BIMAN BAGCHI
 *The Journal of Physical Chemistry B*, **114**, 12875–12882 (2010)

Supervision/Teaching experience

- 2018 **Master's Thesis**, *Anubhav Kaphle*, GGNB, Georg August Universität, Göttingen, (currently doing PhD with Prof. David Balding).
 - *Thesis title*: Statistical method to discover trans-eQTLs for better prediction of gene expression from genotype data
 - *Submitted on*: March 31, 2018
- 2018 **Internship**, *Raktim Mitra*, IIT Kanpur.
 - *Project title*: A novel method for discovery of trans-eQTLs using reverse regression
- 2017 **Internship**, *Rahul Nagial*, IIT Kanpur.
 - *Project title*: Identifying new coronary artery disease risk regions using eQTL analysis of GTEx data
- 2012 **Teaching Assistant**, *Graduate level course SS207*, SSCU, IISc.
 - *Course title*: Non-equilibrium statistical mechanics: Application to biological systems
 - *Instructor*: Prof. Biman Bagchi

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2011 **Teaching Assistant**, *Graduate level course SS206*, SSCU, IISc.

- *Course title*: Statistical mechanics of liquids & simple systems
- *Instructor*: Prof. Biman Bagchi

Conferences

- Sep 2018 **17th European Conference on Computational Biology**, ECCB, Athens.
Poster title: B-LORE: Bayesian multiple logistic regression for case-control GWAS
- Apr 2017 **GTEx Project Community Meeting**, *Enhancing the Usage of Human Genomics for the benefit of all*, GTEx, Barcelona.
Poster title: A Bayesian multivariate meta-analysis method in GWAS
- Jan 2015 **Faraday Discussions (FD177)**, *Temporally and spatially resolved molecular science*, Royal Society of Chemistry, Bangalore.
Poster title: Diffusion on a rugged energy landscape with spatial correlation
- Dec 2014 **13th Eurasia Conference on Chemical Sciences**, Indian Institute of Science, Bangalore.
Poster title: Diffusion in a rough potential revisited
- Nov 2014 **The Second International Symposium on Protein Folding and Dynamics**, National Centre for Biological Sciences, Bangalore.
Poster title: Diffusion on a rugged energy landscape with spatial correlation
- Sep 2013 **Current Trends in Theoretical Chemistry**, Bhaba Atomic Research Centre, Mumbai.
Poster title: Orientational patterns and hydrophobic force law in 2D water-like molecular systems
- Dec 2011 **International Symposium on Chemistry and Complexity**, Indian Association for the Cultivation of Science, Kolkata.
Poster title: Percolation transition in aqueous binary mixture of amphiphilic molecules
- Jul 2009 **Frontiers in Chemical Biology: Proteins Structure, Function & Dynamics**, jointly organized by IISc and JNCASR, Bangalore.
Poster title: Self-organization of n-alkane chains in water

Other interests

- Long distance biking
- Android app development
- Web development
- Mountains
- Graphic design
- Photography

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5/6

References

- **Dr. Johannes Söding**, *Max Planck Institute for Biophysical Chemistry*, Göttingen, Germany.
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- **Prof. Biman Bagchi**, *Indian Institute of Science*, Bangalore, India.
✉ profbiman@gmail.com
- **Dr. Suman Chakrabarty**, *S. N. Bose National Centre for Basic Sciences*, Kolkata, India.
✉ sumanc@bose.res.in
- **Prof. Kazuhiko Seki**, *AIST*, Tsukuba, Japan.
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