Sorin TĂNASE-NICOLA

sorin.tanase@icm.uu.se

Personal Information		**Contact information**
Date of birth:	July, 9, 1977	Dept for Cell and Molecular Biology
Place of birth :	Slatina, Romania	Biomedical Center, Box 596, Husarg. 3
Citizenship:	Romanian	SE-751 24 Uppsala

Present position

Research Fellow (forskarassistent) in the Program for Computational and Systems Biology, Department of Cell and Molecular Biology, Uppsala University, June, 1, 2011 – May, 31, 2015.

Education

University Paris VI (Pierre et Marie Curie – PMC) and École Normale Supérieure (ENS), Paris
PhD 2004, MS 2001, BS 2000

University of Bucharest, Romania, Applied Physics, 1996-1999

Research experience

2010-present	PostDoc, Emory University, United States, group of Ilya Nemenman;
2007-2010	PostDoc, University of Michigan, United States, group of David Lubensky;
2004-2007	PostDoc AMOLF, Amsterdam, group of Pieter Rein ten Wolde;
2001-2004	PhD under the supervision of Jorge Kurchan, Laboratoire de Physique et Mécanique des Milieux Hétérogènes (PMMH), École Supérieure de Physique et de Chimie Industrielles (ESPCI), Paris. Title: **Rare and Unstable Trajectories**. *Localisation methods for transition paths and computation of Lyapunov exponents.*
2001-2001	Master's research project, Statistical Physics Laboratory, ENS, Paris group of Daniel Bonn; subject: Aging and Shear Rejuvenation of the Laponite Colloidal Glass.
2000-2000	Undergraduate experimental project, Pierre Aigrain Laboratory, ENS, "Coherent and Non-Linear Optics" group; subject: Optical properties of quantum dots.
1999-2000	Undergraduate project, Statistical Physics Laboratory, ENS, Paris group of Werner Krauth; subject: New simulation methods of hard disk systems.
1998-1999	Collaboration in the dosimetry department at the Public Health Ministry, Bucharest, Romania subject: Calibration of solid-state personal dosimeters.

Referee for: Physical Review Letters, Physical Review E, Journal of Chemical Physics, PLOS Biology, Physical Biology.

Teaching experience

2010	Emory University, co-instructor, Physics 380, 2010: Information Processing in Biology; Graduate student supervision: Jakub Otwinowski.
2005-2007	AMOLF, Graduate student supervision: Marco Morelli.

Honors and awards

CNRS fellowship, 2001-2004; French Government Stipend, 1999-2001; ENS International concours, 1999; University of Bucharest Honorary Stipend, 1996-1999; International Physics Olympiad, medal 1996; Romanian National High School Olympiads, winner 1990-1996.

Work in progress

- "Fitness in fluctuating environments" with Ilya Nemenman (to be submitted);
- "Dynamical models and evolution of developmental genetic networks" with D. Lubensky (in progress);
- "A neutral model of intra- and inter-species expression divergence" with D. Lubensky and P. Wittkopp (to be submitted);
- "Phase transition and exchange of stability in a bistable chemical system" with D. Lubensky (to be submitted);

References

- Daan Frenkel (collaborator)
  Professor, Department of Chemistry,
  University of Cambridge
  Lensfield Road, Cambridge CB2 1EW, UK
  Phone : +44 (0)1223 336377
  Fax : +44 (0)1223 336362
  E-mail: df246@cam.ac.uk
- Jorge Kurchan (PhD advisor)
  Laboratoire de Physique et Mécanique des Milieux Hétérogènes,
  UMR CNRS 7636 École Supérieure de Physique et de Chimie Industrielles
  10 rue Vauquelin, 75231 Paris Cedex 05, France
  Phone: +33 (0)1 40 79 4522
  Fax: +33 (0)1 40 79 4523
  E-mail: jorge@pmmh.espci.fr
- David K. Lubensky (PostDoc advisor)
  Norman M. Leff Assistant Professor, Department of Physics,
  Bioinformatics Graduate Program & Biophysics Graduate Program,
  University of Michigan
  450 Church St., Ann Arbor MI 48109-1040, USA
  Phone: +1 734 936 1540
  Fax: +1 734 763 9694
  E-mail: dkluben@umich.edu
- Ilya Nemenman (PostDoc advisor)
  Associate Professor, Computational and Life Sciences Strategic Initiative,
  Departments of Physics and Biology, Neurocience Graduate Program, Emory University
  Department of Physics, Math & Science Center
  400 Dowman Dr., N240
  Atlanta, GA 30322
  Phone +1 404 727 9286
  Fax: +1 404 727 0873
  E-mail: ilya.nemenman@emory.edu
- Pieter Rein ten Wolde (PostDoc advisor)
  Biochemical Networks Group,
  FOM Institute AMOLF
  Kruislaan 407, 1098 SJ Amsterdam, The Netherlands
  Phone: +31 (0)20 608 1394
  Fax: +31 (0)20 668 4106
  E-mail: tenwolde@amolf.nl

Publication

Selected publications are marked with an *

Refereed papers

1. * Fitness in time-dependent environments includes a geometric phase contribution, S. Tănase-Nicola and I. Nemenman, Journal of the Royal Society Interface, accepted (2011).
2. Speeding up evolutionary search by small fitness fluctuations, J. Otwinowski, S. Tănase-Nicola and I. Nemenman, J. Stat. Phys., **144**, 367–378 (2010). Times cited: 0
3. Reciprocal sign epistasis is a necessary condition for multi-peaked fitness landscapes, F. Poelwijk, S. Tănase-Nicola, D. Kiviet, and S. Tans, J. Theor. Biology, **272**, 141-144 (2010). Times cited: 3
4. Spatio-temporal correlations can drastically change the response of a MAPK pathway, K. Takahashi , S. Tănase-Nicola, and P. R. ten Wolde, Proc. Natl. Acad. Sci. USA , **107**, 2473-2478 (2010). Times cited: 11
5. The switching dynamics of the bacterial flagellar motor, S. van Albada, S. Tănase-Nicola, and P. R. ten Wolde, Molecular Systems Biology, **5**, 316 (2008). Times cited: 2
6. Homogeneous nucleation under shear in a two dimensional Ising model: Cluster growth, coalescence, and breakup, R. J. Allen, C. Valeriani S. Tănase-Nicola, P. R. ten Wolde, and D. Frenkel, J. Chem. Phys. **129**, 134704 (2008). Times cited: 21
7. * Regulatory control and the costs and benefits of biochemical noise, S. Tănase-Nicola and P. R. ten Wolde, PLOS Comp. Biol. **4**, e1000125 (2008). Times cited: 6
8. Reaction coordinates for the flipping of genetic switches, M. J. Morelli, R. J. Allen, S. Tănase-Nicola, and P. R. ten Wolde, Biophys. J. **94**, 3413–3423 (2008). Times cited: 13
9. Eliminating fast reactions in stochastic simulations of biochemical networks: a bistable genetic switch, M. J. Morelli, R. J. Allen, S. Tănase-Nicola, and P. R. ten Wolde, J. Chem. Phys. **128**, 045105 (2006). Times cited: 0
10. * Signal detection, modularity, and the correlation between extrinsic and intrinsic noise in biochemical networks, S. Tănase-Nicola, P. B. Warren, and P. R. ten Wolde, Phys. Rev. Lett. **97**, 068102 (2006). Times cited: 36
11. Diffusion of transcription factors can drastically enhance the noise in gene expression, J. S. van Zon, M. J. Morelli, S. Tănase-Nicola, and P. R. ten Wolde, Biophys. J. **91**, 4350 (2006). Times cited: 36
12. Exact results for noise power spectra in linear biochemical reaction networks, P. B. Warren, S. Tănase-Nicola, and P. R. ten Wolde, J. Chem. Phys. **125**, 144904 (2006). Times cited: 19
13. Kramers equation and supersymmetry, J. Tailleur, S. Tănase-Nicola, and J. Kurchan, J. Stat. Phys. **122**, 557 (2006). Times cited: 9
14. * Metastable states, transitions, basins and borders at finite temperatures, S. Tănase-Nicola and J. Kurchan, J. Stat. Phys. **116**, 1201 (2004). Times cited: 15
15. * Topological methods for searching barriers and reaction paths, S. Tănase-Nicola and J. Kurchan, Phys. Rev. Lett. **91**, 188302 (2003). Times cited: 14
16. Statistical-mechanical formulation of Lyapunov exponents, S. Tănase-Nicola and J. Kurchan, J. Phys. A **36**, 10299 (2003). Times cited: 5
17. Laponite: Aging and shear rejuvenation of a colloidal glass, D. Bonn, S. Tanase, B. Abou, H. Tanaka, and J. Meunier, Phys. Rev. Lett. **89**, 015701 (2002). Times cited: 59

Refereed Conference Publications

1. Nucleation in a sheared two-dimensional Ising model: Effects of external field, R. J. Allen, C. Valeriani, and S. Tănase-Nicola, Prog. Theor. Phys Suppl. **175**, 144-153 (2008). Times Cited: 1
2. Mapping reaction paths in phase-space, J. Trailleur, S. Tănase-Nicola, and J. Kurchan, International Journal of Modern Physics B **20**, 5254 (2006). Times Cited 0
3. Characteristics of TLD-100 fading and its influence on the calibration of personal dosemeters, A. Vasilache, R, S. Tănase-Nicola, and R. Tiron, Radiation Protection Dosimetry **85**, 183 (1999). Times Cited 0

Invited Contribution

1. Biophysics: Pass on the message, P. R. ten Wolde and S. Tănase-Nicola, Nature Physics **2**, 371 (2006). Times Cited: 1

Presentations

- "Selection in correlated, dynamic environments", **invited talk**, IST, Austria, December 2010.
- "Fitness effects of fluctuations in biochemical networks", **invited talk**, APS March Meeting 2009, Pittsburgh.
- "Fitness effects of fluctuations in biochemical networks", **invited talk**, Lewis-Singler Institute for Integrative genomics, Princeton, October 2008.
- "Regulatory control and the costs and benefits of biochemical noise", **invited talk**, Columbia University, New York, October 2008.
- "Regulatory control and the costs and benefits of biochemical noise", talk, APS March Meeting 2008, New Orleans.
- "Costs and benefits of fluctuations in regulatory genetic networks ", **invited talk**, Symposium on Bioinformatics and biomathematics, CWI, Amsterdam, April 2007.
- "Cost of fluctuations in biochemical networks", talk, Biolateral triangle meeting, Paris, January 2007.
- "Fluctuations in chemical networks. Heterogeneity and response to changes", **invited talk**, Extreme Events in Complex Systems Conference, Dresden, October 2006.
- "Stochasticity at the cellular level. Models and consequences", **invited talk**, Biophysics talks, ENS, Paris, September 2006.
- "Supersymmetry and reaction rates", **invited talk**, Theoretical Physics Seminar, Bucharest, July 2006.
- "Noise in biochemical networks. Modularity and correlations", talk, Biolateral triangle meeting, Amsterdam, March 2006.
- "Signal detection, modularity and correlated fluctuations in biochemical signaling networks", poster, Scientific Meeting FOM, Lunteren, January 2006.
- "Noise in biochemical networks. Modularity and correlations", talk, Internal AMOLF Kleyn Colloquium, Amsterdam, April 2005.
- "Topological methods for searching barriers and reaction paths", poster, Scientific Meeting FOM, Lunteren, January 2005.