

GAŠPER TKAČIK

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DATE OF BIRTH	24 th May 1979 (Ljubljana, Slovenija)
NATIONALITY	Slovenija, EU
NATURAL LANGUAGES	Slovene, English, German (passive)
COMP. LANGUAGES	C++, Java, XML, UML, CORBA, Mathematica/Matlab

POSITIONS

2011– **Assistant Professor, Institute of Science and Technology Austria**

ACADEMIC EDUCATION

2008–2010	Postdoctoral Research Associate, University of Pennsylvania Supervisor: Vijay Balasubramanian, Phil Nelson
2007	Postdoctoral Research Associate, Princeton University Supervisor: William Bialek
2002–2007	Ph.D. in Physics, Princeton University Supervisor: William Bialek (Physics), Curtis G. Callan Jr. (Physics) Title: Information flow in biological networks
2001–2002	Graduate Research Fellow Faculty of Mathematics and Physics, University of Ljubljana
1997–2001	BSc. Mathematical Physics, University of Ljubljana Supervisor: Uroš Seljak (Physics) Title: The study of dark energy with gravitational lensing

OTHER EDUCATION

2009	The Physics and Mechanics of Biological Systems Les Houches, France, EU
2008	Methods in Computational Neuroscience Woods Hole, MA, USA
2008,09,10	Short term visitor (E Schneidman) Weizmann Institute of Science, Rehovot, Israel
2007	Short term visitor (MO Magnasco) The Rockefeller University, New York, NY, USA
2006	Quantitative Approaches to Gene Regulatory Systems

UCSD San Diego, CA, USA
2004 **Multiple Aspects of DNA and RNA**
Les Houches, France, EU
2003 8th **International School of Biophysics**
Rovinj, Croatia

TEACHING EXPERIENCE

2010 Teaching assistant, Methods in Computational Neuroscience, Woods Hole
2010 Lecturer at Okinawa IST, Summer School on Evol. and Comparative Genomics
2006 Graduate student teaching award, Princeton University
2005-2006 Teaching assistant, Biophysics graduate course (PHY 562)
2005-2006 Teaching assistant, Integrated course in Natural Sciences (CHM 231)
2004-2005 Helped TA Biophysics graduate course (PHY 562)
2001-2002 Teaching assistant, General Physics Lab, University of Ljubljana

PROFESSIONAL EXPERIENCE

2005- Co-editor of *Princeton Report on Knowledge* (<http://prok.princeton.edu>)
2005 Summer internship with *Intech*, a Princeton-based investment company
2002- Technical and business consulting for *Cosylab*, Ljubljana
2000-2002 Helped form an IT startup company *Cosylab*, Ljubljana
work experience as Chief Software Architect
1998-2001 Josef Stefan Institute
Development of the control system for synchrotron light source ANKA
Forschungszentrum Karlsruhe, Germany

AWARDS AND HONORS

2006 Charlotte E Procter Honorific Fellowship, Princeton University
2004 Graduate Fellowship of the City of Ljubljana
2003 Burroughs-Wellcome Fellowship, BWF Fund
2002 Centinneal Fellowship, Princeton University
2002 Golden sign of the University of Ljubljana
1997 Bronze medal at International Physics Olympiad

PUBLICATIONS

- [1] Tkačik G, Prentice JS, Victor JD, Balasubramanian V, **Local statistics in natural scenes predict the saliency of synthetic textures.** *Proc Nat'l Acad Sci USA* (2010).
- [2] Tkačik G, Prentice JS, Balasubramanian V, Schneidman E, **Optimal population coding by noisy spiking neurons.** *Proc Nat'l Acad Sci USA* **107**: 14419–14424 (2010).
- [3] Tkačik G, **From statistical mechanics to information theory: understanding biophysical information processing systems,** *Lecture notes for 2010 summer school on Quantitative Evolutionary and Comparative Genomics, Okinawa Institute of Science and Technology, arXiv.org:1006.4291* (2010).
- [4] Prentice JS, Homann J, Simmons KD, Tkačik G, Balasubramanian V, Nelson PC, **Fast, scalable, Bayesian spike identification for multi-electrode arrays.** *arXiv.org:1007.2787* (2010).
- [5] Walczak A, Tkačik G, Bialek W, **Optimizing information flow in small genetic networks. II. Feed-forward interactions.** *Phys Rev E* **81**: 041905 (2010).
- [6] Kryazhinskiy S⁼, Tkačik G⁼, Plotkin JB, **The dynamics of adaptation on correlated fitness landscapes,** *Proc Nat'l Acad Sci USA* **106**: 18638–43 (2009).
- [7] Tkačik G, Walczak AM, Bialek W, **Optimizing information flow in small genetic networks,** *Phys Rev E* **80**: 031920 (2009).
- [8] Tkačik G, Bialek W, **Diffusion, dimensionality and noise in transcriptional regulation,** *arXiv.org:0712.1852, Phys Rev E* **79** 051901 (2009).
- [9] Tkačik G, Bialek W, **Cell biology: Networks, regulation, pathways,** *arXiv.org: 0712.4385, Encyclopedia of Complexity and Systems Science* RA Meyers ed, pp 719–741, (Springer Verlag, Berlin, 2009).
- [10] Tkačik G, Magnasco MO, **Decoding spike timing: the differential reverse correlation method,** *Biosystems* **93**: 90–100 (2008).
- [11] Stephens GJ, Mora T, Tkačik G, Bialek W, **Thermodynamics of natural images,** *arXiv.org: 0806.2694* (2008).
- [12] Tkačik G, Callan CG Jr, Bialek W, **Information capacity of genetic regulatory elements,** *Phys Rev E* **78**: 011910 (2008).
- [13] Tkačik G, Callan CG Jr, Bialek W, **Information flow and optimization in transcriptional regulation,** *Proc Nat'l Acad Sci USA* **105**: 12265–12270 (2008).
- [14] Tkačik G, Gregor T, Bialek W, **The role of input noise in transcriptional regulation,** *PLoS ONE* **3**: e2774 (2008).
- [15] Broderick T, Dudik M, Tkačik G, Schapire RE, Bialek W, **Faster solutions of the inverse pairwise Ising problem,** *arXiv.org:0712.2437*
- [16] Tkačik G, Schneidman E, Berry MJ II, Bialek W, **Ising models for networks of real neurons,** *arXiv.org:q-bio.NC/0611072.*
- [17] Kinney JB, Tkačik G, Callan CG Jr, **Precise physical models of protein-DNA interaction from high-throughput data,** *Proc Nat'l Acad Sci USA* **104**: 501-506 (2007).
- [18] Slonim N, Atwal GS, Tkačik G, Bialek W, **Information-based clustering,** *Proc Nat'l Acad Sci USA* **102**: 18297 (2005).
- [19] Slonim N, Atwal GS, Tkačik G, Bialek W, **Estimating mutual and multi-information in large networks,** *arXiv.org:cs.IT/0502017* (2005).