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EDUCATION	<i>Michigan State University</i> , East Lansing, MI Ph.D. in Theoretical Physics	1996-2001
	<i>Ukraine National University</i> , Kiev, Ukraine M.S. in Theoretical Physics (diploma with honors)	1992-1997
	Summer school: <i>Methods in Computational Neuroscience</i> Marine Biological Laboratory, Woods Hole, MA	2001
RESEARCH EXPERIENCE	<i>The Salk Institute for Biological Studies</i> , La Jolla, CA Assistant Professor	2007 - present
	<i>University of California, San Francisco</i> , CA Assistant Research Scientist	2004-2007
	<i>University of California, San Francisco</i> , CA Sloan-Swartz Postdoctoral Fellow in Theoretical Neurobiology	2001-2004
RESEARCH INTERESTS	Statistical physics and information theory approach to understanding sensory processing. Statistical properties of natural auditory and visual environments. Neural adaptation as an optimization problem. Formation of selective, yet invariant neural responses with respect to continuous transformations, such as translation or scaling.	
GRANTS	K25 Mentored Quantitative Research Career Development Award, National Institute of Mental Health	2004-2009
	Research grant from the Swartz Foundation	2003-2004
SERVICE	Ad hoc reviewer for <i>Science</i> , <i>Neural Computation</i> , <i>Journal of Vision</i> , <i>Journal of the Optical Society of America A</i> , <i>Advances in Neural Information Processing Systems</i> .	
PROFESSIONAL SOCIETY MEMBERSHIP	American Physical Society Society for Neuroscience	1996 - present 2001 - present
HONORS	The 2001 Sherwood K. Haynes Physics Award to an "Outstanding Physics/Astronomy Graduate Student" from Department of Physics-Astronomy, Michigan State University.	2001
	Thomas A. Kaplan Award for Best CMP Research Presentation by a Graduate Student	1998-1999

LIST OF PUBLICATIONS

All published papers are available in PDF format at <http://cnl.salk.edu/~sharpee/publications.html>

Papers: Neuroscience and Information-Theory

1. **T. Sharpee**, K. Nagel, A.J. Doupe, “Two-dimensional encoding in the songbird auditory forebrain and its possible function, *in preparation*.”
2. **T. Sharpee** and Jonathan D. Victor, “Spatial symmetry and stability of V1 receptive fields revealed with two-dimensional Hermite functions”, *submitted*.
3. **T. Sharpee** and William Bialek, “Optimal neural decision boundaries for maximal information transmission”, *under revision*.
4. **T. Sharpee**, Kenneth D. Miller, and Michael P. Stryker, “On the importance of nonlinearity in estimating receptive fields with natural stimuli”, *under revision*.
5. **T. Sharpee**, “Comparison of information and variance optimization strategies for characterizing neural feature selectivity”, *under revision for Statistics in Medicine*.
6. **T. Sharpee**, H. Sugihara, S. Rebrik, A. Kurgansky, M.P. Stryker, and K.D. Miller, “Adaptive filtering enhances information transmission in visual cortex”. *Nature* **439**, pp. 936-942 (2006). See also <http://arxiv.org/abs/q-bio.NC/0611037>.
7. J. D. Victor, F. Mechler, M. Repucci, K. Purpura, **T. Sharpee**, “Responses of V1 neurons to two-dimensional Hermite Functions”. *Journal of Neurophysiology*, **95**, pp. 379-400 (2006)
8. **T. Sharpee**, Nicole C. Rust, and William Bialek, “Analyzing Neural Responses to Natural Signals: Maximally Informative Dimensions”, *Neural Computation* 16 (2), pp. 223-250 (2004). See also <http://xxx.lanl.gov/abs/physics/0212110>.

Papers: Condensed Matter Theory and Mathematical Physics

1. **T. Sharpee**, M.I. Dykman, and P.M. Platzman, “Tunneling decay in a magnetic field”, *Phys. Rev. A* **65**, 032122 (2002). See also <http://xxx.lanl.gov/abs/cond-mat/0106566>.
2. **T. Sharpee**, M.I. Dykman, and P.M. Platzman, “Tunneling from a correlated 2D electron system transverse to a magnetic field”, *Phys. Rev. B* **64**, 245309 (2001). See also <http://xxx.lanl.gov/abs/cond-mat/0103151>.
3. M.I. Dykman, **T. Sharpee**, and P.M. Platzman, “Enhancement of tunneling from a correlated 2D electron system by a many-electron Mössbauer-type recoil in a magnetic field”, *Phys. Rev. Lett.* **86**, pp. 2408-11 (2001). See also <http://xxx.lanl.gov/abs/cond-mat/000642>.
4. **T. Barabash-Sharpee**, M.I. Dykman, and P.M. Platzman, “Tunneling transverse to a magnetic field, and its occurrence in correlated 2D electron systems”, *Phys. Rev. Lett.* **84**, pp. 2227-30 (2000).
5. **T. Barabash**, M.I. Dykman, P.M. Platzman, and V.N. Smelyanskiy, “Ripplon-induced tunneling transverse to the magnetic field”, *Phys. Rev. B* **58**, pp. R10214-7 (1998).
6. M.A. Ivanov, B.A. Greenberg, and **T.O. Barabash**, “Description of the behavior of a dislocation ensemble with allowance for dislocation multiplication reproduction”, *Phys. Met. Metallogr.* **86**, 3, pp. 240-9 (1998)
[*Fizika Metalov i Metalovedenie* **86**, 3, pp. 24-38 (1998)].
7. B.A. Greenberg, M.A. Ivanov, **T.O. Barabash**, and A.G. Blokhin, “Comparative analysis of stress jumps in metals and intermetallic compounds: I. Description of two-stage straining”, *Phys. Met. Metallogr.* **81**, 4, pp. 374-80 (1996).
8. B.A. Greenberg, M.A. Ivanov, **T.O. Barabash**, and A.G. Blokhin, “Comparative analysis of stress jumps in metals and intermetallic compounds: II. Stress Macrojumps”, *Phys. Met. Metallogr.* **81**, 4, pp. 381-6 (1996).

9. **T.O. Barabash** and S.D. Eidelman, “Necessary and sufficient conditions on boundary regime that guarantee the stabilization of the solutions of a model third-order equation”, *Dopov. Nats. Akad. Nauk Ukraini*, 10, pp. 5-7 (1995).
10. **T. Barabash**, “Why does an aspen leaf tremble?”, *Quantum* **1**, pp. 16-8, (1992).

Conference Proceedings (Refereed)

1. **T. Sharpee**, A.V. Kurgansky, H. Sugihara, S. Rebrik, M.P. Stryker, and K.D. Miller, “Probing neural feature selectivity of neurons in primary visual cortex with natural stimuli”, *Fluctuations and Noise in Biological, Biophysical and Biomedical Systems II*, edited by D. Abbott, S. M. Bezrukov, A. Der, and A. Sánchez, pp. 212-222, *Proceedings of SPIE* **5467** (2004).
2. **Tatyana Sharpee**, Nicole C. Rust, and William Bialek, “Maximally informative dimensions: Analyzing neural responses to natural signals”, *Advances in Neural Information Processing 15* edited by S. Becker, S. Thrun and K. Obermayer, pp. 261-268 (MIT Press, Cambridge 2003). See also <http://xxx.lanl.gov/abs/physics/0208057>.
3. **T.O. Barabash** and S.D. Eidelman, “Asymptotic behavior of solutions of boundary value problems for linearized KdV equation”, in *Nonlinear boundary value problems*, Kiev, pp. 13-9 (1997).