

UPDATE



December 2005

SANTA FE INSTITUTE

INSIDE SFI: ON AND OFF THE COWAN CAMPUS

<http://www.santafe.edu/events/update/insidesfi.php>

SFI IN THE NEWS

The European Physical Society is publishing a special November/December issue of *Europhysics News* dedicated exclusively to nonextensive statistical mechanics. In this issue is an article entitled "Extensivity and Entropy Production," by **Constantino Tsallis**, **Murray Gell-Mann**, and **Yuzuro Sato**.

For more information, please see <http://www.europhysicsnews.com/>

SFI VISITS UNITED ARAB EMIRATES

Constantino Tsallis, SFI Visiting Researcher, was invited to visit the United Arab Emirates University and present a lecture including content from a recently published paper entitled "Asymptotically Scale-Invariant Occupancy of Phase Space Makes the Entropy S_q Extensive" (**C. Tsallis**, **M. Gell-Mann**, and **Y. Sato**. *Proc. Natl. Acad. Sc. USA* 102 (2005): 15377-15382).

The workshop on the International Heliphysical Year IHY 2007 was co-sponsored by the United Nations, the European Space Agency, and NASA and held on November 20-23, 2005, in Abu-Dhabi.

For more information, please see <http://www.ihy.uaeu.ac.ae/index.htm>

BOWLES'S VISITS

Sam Bowles, Director of SFI's Behavioral Sciences program, will present several lectures in December.

He will first lecture in Europe on some aspects of the dynamics of social institutions and individual preferences.

On December 6 he will give the keynote address at the international workshop on Social and Behavioral Economics in Valencia, Spain, entitled: "Public Policy and Social Preferences: Are Good Laws a Substitute for Good Citizens?"

On December 13 he will lecture at the University of Siena on "Institutional Innovation: A Perturbed Markov Model."

And on December 16, Sam will present the keynote address at the European Network on Polarization and Conflict meeting at Bocconi University in Milan, Italy, on "The Evolutionary Dynamics of Class Structures."

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Sam will also be meeting in Brussels in early December with a group of biologists and social scientists who are planning a major collaboration on "The Evolution of Cooperation and Trading: From Microbes to Man."

VISITOR AND COLLOQUIUM SPEAKER

Rajan Gupta, Group Leader for the High Energy Physics Group (T-8) at Los Alamos National Laboratory, presented a colloquium at SFI on December 1, 2005, entitled "Energy Security in the 21st Century: The Need for Bold and Novel Thinking."

BUSINESS NETWORK NEWS

<http://www.santafe.edu/events/update/businessnetwork.php>

ANNOUNCING A NEW BUSINESS NETWORK MEMBER

The Santa Fe Institute is pleased to welcome the **Air Force Office of Scientific Research** to the Business Network.

The **Air Force Office of Scientific Research (AFOSR)**, located in Arlington, Virginia, manages the United States Air Force's investment in basic research. AFOSR invests in long-term, broad-based research in aerospace-related science and engineering, and exploits revolutionary scientific breakthroughs to address the needs of the Air Force. For more information visit www.afosr.af.mil.

BUSINESS NETWORK FELLOWSHIP

The application process for the 2006 Business Network Fellowship begins next month. The Fellowship is open to individuals from member companies of the Santa Fe Institute Business Network. The Fellowship supports an individual up to four weeks over a two-year period to pursue research congruent to the research of the Santa Fe Institute. More information about the Fellowship and how to apply will be available in January. Questions should be directed to **Ann Stagg** at annstagg@santafe.edu.

SFI SUMMER SCHOOL GRADUATES DEVELOP A COMPLEXITY BLOG WEBSITE

ComplexityBlog.com is a new website devoted to the science, engineering, and philosophy of complexity. Topics include the theory and applications of complex systems, methodology, research ideas, engineering of adaptive systems (machine learning, evolutionary algorithms, swarm behavior), and more. The site also has a growing collection of resources for agent-based modeling and various other areas related to complexity science.

The Blog was put together by SFI Complex Systems Summer School alumni and University of Michigan graduate students **Aaron Bramson** and **Kenneth Zick**; it can be accessed at www.complexityblog.com

NOTES FROM THE INTERNATIONAL PROGRAM

<http://www.santafe.edu/events/update/international.php>

INTERNATIONAL FELLOW VISITS SFI

SFI International Fellow **Arkadiusz Majka**, from the Interdisciplinary Center for Mathematical and Computational Modeling at Warsaw University, returned to SFI on October 30 to continue his work on the application of statistical mechanics and classical thermodynamics to Choice Theory. He is attempting to understand the mathematical properties of Choice Theory in order to make all analogies from other disciplines complete. In collaboration with SFI Postdoctoral Fellow **Michael Gastner**, Arkadiusz is applying the model to real data from the American Airlines network.

INTERNATIONAL VISITOR AT SFI

SFI International Visitor **José Manuel Gomez Soto**, from CINVESTAV-IPN, México, arrived at SFI on November 7 to collaborate with **Constantino Tsallis** on research concerning statistical mechanics and complexity. He will also work on calculated non-extensive entropy in cellular automata.

PUBLICATIONS

<http://www.santafe.edu/events/update/publications.php>

WORKING PAPERS

<http://www.santafe.edu/research/publications/working-papers.php>

REFEREED LITERATURE

<http://www.santafe.edu/events/update/publications.php>

Bowles, S., and H. Gintis. "Prosocial Emotions." In *Economy as an Evolving Complex System, III*, edited by Lawrence E. Blume and Steven N. Durlauf, 339-366. New York: Oxford University Press, 2006.

Cooper, F., A. Khare, B. Mihaila, and A. Saxena. "Exact Solitary Wave Solutions for a Discrete Lambda Phi(4) Field Theory in 1+1 Dimensions." *Phys. Rev. E* 7203(3 PT 2) (2005): 1687-1697.

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Gintis, H. "Class Dismissed." *Commentary* 120(4) (2005): 12,14.

Gumerman, G. J., and M. Warburton. "The Universe in a Cultural Context: An Essay." *Current Studies in Archaeoastronomy: Conversations Across Time and Space* (2005): 15-24.

Hanel, R., S. A. Kauffman, and S. Thurner. "Phase Transition in Random Catalytic Networks." *Phys. Rev. E* 7203(3 PT 2) (2005): 1145-1151.

Hofmeyr, S. "Host Intrusion Prevention: Part of the Operating System or on Top of the Operating System?" *Computers & Security* 24(6) (2005): 440-442.

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Smith, E. "Thermodynamic Dual Structure of Linear-Dissipative Driven Systems." *Phys. Rev. E* 7203(3 PT 2) (2005): 1252-1264.

Tessier, T. E., C. M. Caves, I. H. Deutsch, B. Eastin, and D. Bacon. "Optimal Classical-Communication-Assisted Local Model of n -qubit Greenberger-Horne-Zeilinger Correlations." *Phys. Rev. A* 7203(3) (2005): 266- 270.

Tsallis, C., M. Gell-Mann, and Y. Sato. "Asymptotically Scale-Invariant Occupancy of Phase Space Makes the Entropy S_q Extensive." *PNAS* 102 (43) (2005): 15377-15382.

LIBRARY ACQUISITIONS

For a list of recent purchases by the SFI library, please see <http://www.santafe.edu/events/update/library.php>

CALENDAR OF EVENTS

<http://www.santafe.edu/events/calendar.php>

December 2 - 3

Working Group — Sensitive Data in a Wired World
organized by *Stephanie Forrest*

DECEMBER VISITORS AND ARRIVALS

<http://www.santafe.edu/events/monthlyvisitors.php>

Elena Alvarez-Buylla (12/15-1/11), *Universidad Nacional Autonoma de Mexico, Institute of Ecology*

Robert Axtell (12/14-16), *Economic Studies and Governance Studies Program, The Brookings Institution*

Morten Christiansen (12/4-6), *Department of Psychology, Cornell University*

Bernat Corominas (11/29-12/14), *Complex Systems Lab, Language Evolution Team, Universitat Pompeu Fabra*

José Manuel Gomez Soto (11/7-12/15), *CINVESTAV-IPN*

Rajan Gupta (12/1-1), *Los Alamos National Laboratory*

Erica Jen (12/18-28), *Professor, Santa Fe Institute*

Nawwaf Kharma (12/12-13), *Electrical & Computer Engineering Department, Concordia University*

Adlar Kim (11/26-12/16), *Computer Science, Massachusetts Institute of Technology*

Carlos Rodriguez-Caso (11/29-12/14), *Complex Systems Lab, Cancer Modeling Team, Universitat Pompeu Fabra*

Josep Sardanyes (11/29-12/14), *Complex Systems Lab, Protocell Dynamics Team, Universitat Pompeu Fabra*

Ricard Solé (11/29-12/14), *Complex Systems Lab-GRIB, Universitat Pompeu Fabra*

Frits Wiegel (11/7-12/3), *Physics, University of Amsterdam, The Netherlands*

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