STATPHYS 23

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INTERNATIONAL CONFERENCE

Genova, Italy - Magazzini del cotone - July 9-13, 2007

Deadline for abstract submission: March 31, 2007. For details: www.statphys23.org

XXIII IUPAP International Conference on Statistical Physics

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Plenary Speakers

J. P. Bouchaud (Cea Saclay, France)
J. Cardy (Univ. of Oxford, UK)
C. Jarzynski (Univ. of Maryland, USA)
K. Gawedzki (Univ. of Innsbruck, Austria)
S. Leibler (Rockefeller Univ, New York, USA)
H. N. Lekkerkerker (Univ. of Utrecht, The Netherlands)
A. Montanari (Stanford University and Ecole Normale Sup., Paris, France)
A. Vespignani (Indiana Univ. Bloomington, USA)

Invited Speakers

D. Arrigotas (Univ. of California Santa Cruz, USA).
M. Aizenman (Princeton Univ., USA).
U. Alon (Weizmann Institute, Rehovot, Israel).
B. Altshuler (Columbia Univ. New York, USA).
J. S. Andrade (Univ. Fed. do Ceará, Fortaleza, Brasil).
T. Arze (Australian Nat. Univ., Canberra).
M. Barbosa (UFRGS, Porto Alegre, Brasil).
M. Barma (Tata Institute, Mumbai, India).
A. Benyoussef (Univ. Mohammed V, Morocco).
A. Bray (Univ. of Manchester, UK).
P. Broome (Imperial College, London, UK).
H. Chate (Cea Saclay, France).
D. Chowdhury (Indian Inst. Of Technology, Kanpur, India).
L. De Arcangelis (Univ. of Napoli, Italy).
L. Demirel (Koc Univ., Istanbul, Turkey).
A. Dhar (Raman Research Inst., Bangalore, India).
F. Di Francesco (Cea Saclay, France).
E. Domany (Weizmann Institute, Rehovot, Israel).
B. Eckhardt (Univ. Of Marburg, Germany).
D. Farmer (Santa Fe Institute, USA).
S. Franz (ICTP, Trieste, Italy).
A. Gerlasio (MPI fuer Metallforschung, Stuttgart, Germany).
S. Hell (MPI Biophys. Chem., Goettingen, Germany).
H. Hilhorst (Univ. of Paris sud, Orsay, France).
T. Hwa (Univ. of California, San Diego, USA).
M. Kardar (MIT, Boston, USA).
I. Kondor (Collegium Budapest, Hungary).
K. Kremer (MPI Mainz, Germany).
J. Kurchan (ESPCI Paris, France).
R. Livi (Univ. of Firenze, Italy).
A.J. Liu (Univ. of Penn., Philadelphia, USA).
D. Lohse (Univ. Of Twente, The Netherlands).
L. Mahadevan (Harvard Univ., Cambridge, USA).
M.-C. Miguel (Univ. De Barcellona, Spain).
M. Mueller (Univ. of Goettingen, Germany).
M. Newman (Santa Fe Institute, USA).
B. Ocko (Brookhaven Nat. Lab., Stony Brook, USA).
M. J. de Oliveira (Univ. of Sao Paulo, Brasil).
R. Pandit (Indian Institute of Science, Bangalore, India).
H. Park (Korea Institute of Adv. Studies, Seoul, Korea).
A. Petri (ISC-CNT, Tor Vergata, Italy).
S. R. Quake (Stanford University, USA).
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U. Seifert (Univ. of Stuttgart, Germany).
T. Senthil (Indian Institute of Science, Bangalore, India).
P. Sollich (King's College Univ. of London, UK).
A. Sood (Indian Inst. of Science, Bangalore, India).
S. Succi (IAC-CNR, Roma, Italy).
F. Sylos Labini (Centro Fermi and ISC-CNR, Roma, Italy).
T. Tanaka (Kyoto University, Japan).
H. Tasaki (Gakushuin Univ., Tokyo, Japan).
C. Tsironis (Ecole Normale Sup., Paris, France).
P. B. Wolynes (Univ. of California San Diego, USA)

Topics

1. General aspects of statistical physics: thermodynamics; rigorous results and exact solutions.
2. Phase transitions and critical phenomena (equilibrium).
3. Nonequilibrium systems: driven systems, transport theory, relaxation phenomena, random processes.
4. Pattern formation in systems out of equilibrium: growth processes, fracture, hydrodynamic instabilities, chemical reactions etc.
5. Dynamical systems and turbulence.
6. Liquid matter and interfacial phenomena: atomic, molecular and ionic fluids, freezing, metastable liquids, wetting, surface effects, confined systems etc.
7. Soft condensed matter: polymers, liquid crystals, microemulsions, foams, membranes, colloids, granular materials etc.
8. Quantum systems: quantum phase transitions, strongly correlated fermions, Bose-Einstein condensation, mesoscopic quantum phenomena, localization, etc.
9. Disordered and glassy systems: percolation systems, spin glasses, structural glasses, glass transition, etc.
10. Biologically motivated problems: biological networks, molecular motors, dynamics at the scale of the cell, evolution models, protein-folding models, statistical modelling of biological data etc.
11. Interdisciplinary topics in statistical physics: networks, econophysics, traffic flow, algorithmic problems, astrophysical applications, etc.

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Application of Statistical Physics Methods for the Construction of Mass Product Output Mathematical Model

V.P. Demutsky, V.D. Khodusov, and O.M. Pignasty. *Abstract Book of the XXIII IUPAP International Conference on Statistical Physics, Genova, Italy, (9-13 July 2007)*

Abstract

The main aim of this work is the development of mathematical model, which describes the dynamics of mass product output on the manufactures. This model gives an opportunity to find out the conditions for stable work of manufacture and the conditions for optimal operation. At present in the scientific literature describing mass product output are absent reasonably sufficient, valid and self-consistent mathematical models. These questions were considered only on the level of the problem formulation on the basis of particular and deficiency estimates. A theoretical foundation of constructing such models was absent. Methods of statistical physics let us build such base for economical problems of mass product output description. Under consideration of socio-economic systems composed of a sum-total big number of individual elements, one can use well-developed kinetic theory methods of statistical physics. For the description of mass product output it is necessary to introduce the distribution function of base product, phase space in which it is defined, and write down Boltzmann kinetic equation in terms of economical parameters that it satisfies. It gives an opportunity to define macroscopic parameters and to solve for dynamic equations, which they satisfy. These equations act the determinative part in finding out the conditions of stable work of manufacture, its most optimal superintendence and other. Using widespread in statistical physics aggregation methods of microelements for big systems, equations of industrial and marketing systems balance are written. It is shown that in single-stage description, balance equations degenerate in well-known Forresters level equation of industrial and marketing systems. (less)

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