

STATPHYS-KOLKATA VIII

Journal of Physics: Conference Series Volume 638

Kolkata, India
1 – 5 November 2014

ISBN: 978-1-5108-1196-6
ISSN: 1742-6588

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2014) by the Institute of Physics
All rights reserved. The material featured in this book is subject to
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2015)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

FLUCTUATION RELATIONS AWAY FROM EQUILIBRIUM

NONEQUILIBRIUM RESPONSE AND FRENESY	1
<i>Urna Basu, Christian Maes</i>	
NONEQUILIBRIUM THERMODYNAMICS AND A FLUCTUATION THEOREM FOR INDIVIDUAL REACTION STEPS IN A CHEMICAL REACTION NETWORK	18
<i>Krishnendu Pal, Biswajit Das, Kinshuk Banerjee, Gautam Gangopadhyay</i>	
MATHEMATICAL UNDERSTANDING OF DETAILED BALANCE CONDITION VIOLATION AND ITS APPLICATION TO LANGEVIN DYNAMICS	32
<i>Masayuki Ohzeki, Akihisa Ichiki</i>	

STRUCTURE AND PATTERN FORMATION IN NON-EQUILIBRIUM SYSTEMS

SPATIOTEMPORAL PATTERN FORMATION IN A PREY-PREDATOR MODEL UNDER ENVIRONMENTAL DRIVING FORCES	47
<i>Anuj Kumar Sirohi, Malay Banerjee, Anirban Chakraborti</i>	
A FINITE VARIANT OF THE TOOM MODEL	58
<i>Arvind Ayyer</i>	
BRANCHING RANDOM WALK WITH STEP SIZE COMING FROM A POWER LAW	66
<i>Ayan Bhattacharya, Rajat Subhra Hazra, Parthanal Roy</i>	
MENISCUS ARREST DOMINATED IMBIBITION FRONT ROUGHENING IN POROUS MEDIA WITH ELONGATED PORES	71
<i>Heiko Rieger, Christian Thome, Zeinab Sadjadi</i>	
PATTERNS, DYNAMICS AND PHASE TRANSITIONS IN ISING FERROMAGNET DRIVEN BY PROPAGATING MAGNETIC FIELD WAVE	82
<i>Muktish Acharyya</i>	
COMMENSURATE - INCOMMENSURATE VORTEX PHASE IN A NANOPATTERNED SUPERCONDUCTOR	94
<i>Gorky Shaw, S S Banerjee, T Tamegai, Hermann Suderow</i>	
COMPLEX ORDERING IN SPIN NETWORKS: CRITICAL ROLE OF ADAPTATION RATE FOR DYNAMICALLY EVOLVING INTERACTIONS	109
<i>Anand Pathak, Sitabhra Sinha</i>	

INTERACTION AND TRANSPORT IN BIOLOGICAL SYSTEMS

STOCHASTIC MODELS OF CLASSICAL PARTICLE PUMPS : DENSITY DEPENDENCE OF DIRECTED CURRENT	125
<i>Debasish Chaudhuri</i>	
COLLECTIVE EFFECTS IN FORCE GENERATION BY MULTIPLE CYTOSKELETAL FILAMENTS PUSHING AN OBSTACLE	134
<i>J S Aparna, Dipjyoti Das, Ranjith Padinhateeri, Dibyendu Das</i>	
CONFORMATIONAL THERMODYNAMICS OF BIOMOLECULAR COMPLEXES: THE HISTOGRAM-BASED METHOD	141
<i>Amit Das, Samapan Sikdar, Mahua Ghosh, J Chakrabarti</i>	

CO-OPERATIVE DYNAMICS IN SOCIO-ECONOMICAL SYSTEMS

SOCIAL INEQUALITY: FROM DATA TO STATISTICAL PHYSICS MODELING	159
<i>Arnab Chatterjee, Asim Ghosh, Jun-Ichi Inoue, Bikas K Chakrabarti</i>	
TO JOIN OR NOT TO JOIN: COLLECTIVE FORAGING STRATEGIES	168
<i>Kunal Bhattacharya, Tamás Vicsek</i>	

STATISTICAL INFERENCE, SPIN GLASS AND DATA-DRIVEN MODELING

RELATION OF CLASSICAL NON-EQUILIBRIUM DYNAMICS AND QUANTUM ANNEALING..... 175
Hidetoshi Nishimori

SOME RESULTS FOR K-SAT ON TREES..... 180
Sumedha, Supriya Krishnamurthy

**LEARNING PROBABILITY DISTRIBUTIONS FROM SMOOTH OBSERVABLES AND THE
MAXIMUM ENTROPY PRINCIPLE: SOME REMARKS** 187
Tomoyuki Obuchi, Rémi Monasson