

considers the associated quantum random walk problem. In local Cloning of Entanglement Sujit K. Choudhary and Ramij Rahaman shows the (im) possibility of exact cloning of orthogonal but equally entangled quantum states where local operations and classical communication are concerned. They also compute the amount of entanglement necessary in blank copy for various examples.

Throughout the conference and afterwards during the process of compiling this edition, we have been very fortunate in having the active support of our Director, S. K. Pal, and all possible cooperation from our departmental colleagues, research scholars and technical staff. In particular we are very grateful to Ramij Rahaman, Senior Research Scholar, Physics and Applied Mathematics Unit, ISI, for his participation at all stages of our work and to Indranil Dutta, Machine Intelligence Unit, ISI for preparing the camera ready copy.

It is our hope that both the seasoned practitioners and young researchers of physics will get a panoramic view of the recent exciting happenings in diverse branches of physics and will enjoy and benefit from this volume.

Subir Ghosh
Guruprasad Kar
EDITORS

Contents

<i>Foreword</i>	v
<i>Preface</i>	vii
1. Is the End of Theoretical Physics Really in Sight? <i>A. Khare</i>	1
Relativity, Gravitation and Astro-Particle Physics	
2. Holography, CFT and Black Hole Entropy <i>P. Majumdar</i>	13
3. Hawking Radiation, Effective Actions and Anomalies <i>R. Banerjee</i>	31
4. Probing Dark Matter in Primordial Black Holes <i>A. S. Majumdar</i>	53
5. Physics in the ‘Once Given’ Universe <i>C. S. Unnikrishnan</i>	99

High Energy Physics, Nuclear Physics and Quantum Mechanics	121
6. Doubly-Special Relativity <i>G. Amelino-Camelia</i>	123
7. Nuances of Neutrinos <i>A. Raychaudhuri</i>	171
8. Dynamics of Proton Spin <i>A. N. Mitra</i>	189
9. Whither Nuclear Physics? <i>A. Abbas</i>	207
10. Generalized Swanson Model and its Pseudo Supersymmetric Partners <i>A. Sinha and P. Roy</i>	221
Condensed Matter Phenomena	235
11. The Relevance of Berry Phase in Quantum Physics <i>P. Bandyopadhyay</i>	237
12. Quantum Hamiltonian Diagonalization <i>P. Gosselin, A. Bérard and H. Mohrbach</i>	253
13. The Hall Conductivity of <i>Spinning</i> Anyons <i>B. Basu</i>	267
14. Quantum Annealing and Computation <i>A. Das and B. K. Chakrabarti</i>	279

Nonlinear Dynamics	329
15. Liouville Gravity from Einstein Gravity <i>D. Grumiller and R. Jackiw</i>	331
16. Exact Static Solutions of a Generalized Discrete ϕ^4 <i>A. Khare</i>	345
17. A Model for Flow Reversal in Two-Dimensional Convection <i>K. Kumar, S. Paul, P. Pal and M. K. Verma</i>	365
18. Euclidean Networks and Dimensionality <i>P. Sen</i>	375
Quantum Information	383
19. Equal Superposition Transformations and Quantum Random Walks <i>P. Parashar</i>	385
20. Cloning Entanglement Locally <i>S. K. Choudhary and R. Rahaman</i>	405