

# Communications in Theoretical Physics

Vol. 55, No. 1, 2011

## Contents

### General

Holomorphic Factorization of Superstring Scattering Amplitudes <i>Simon Davis</i> .....	1-5
Double Integrable Couplings and Their Constructing Method <i>GUO Fu-Kui and ZHANG Yu-Feng</i> .....	6-12
Lump Solutions of Kadomtsev-Petviashvili I Equation in Non-uniform Media <i>ZHU Xiao-Ming, ZHANG Da-Jun, and CHEN Deng-Yuan</i> .....	13-19
Wronskian and Grammian Solutions for (2 + 1)-Dimensional Soliton Equation <i>ZHANG Yi, CHENG Teng-Fei, DING Da-Jun, and DANG Xiao-Lan</i> .....	20-24
Pseudopotentials, Lax Pairs and Bäcklund Transformations for Generalized Fifth-Order KdV Equation <i>YANG Yun-Qing and CHEN Yong</i> .....	25-28
Modelling and Simulation for Train Movement Control Using Car-Following Strategy <i>LI Ke-Ping, GAO Zi-You, and TANG Tao</i> .....	29-34
Solution of Dirac Equation with Killingbeck Potential by Using Wave Function Ansatz Method under Spin Symmetry Limit <i>M. Hamzavi and A.A. Rajabi</i> .....	35-37
New Formulation of Weyl Quantization Scheme in Coherent State Representation <i>LIU Tang-Kun and FAN Hong-Yi</i> .....	38-40
Dynamics of Quantum Discord in Asymmetric and Local Non-Markovian Environments <i>HAO Xiang, PAN Tao, SHA Jin-Qiao, and ZHU Shi-Qun</i> .....	41-45
Enhanced KR-Fundamental Measure Functional for Inhomogeneous Binary and Ternary Hard Sphere Mixtures <i>ZHOU Shi-Qi</i> .....	46-58
Cavity-Induced Self-Trapping of a Bose Josephson Junction <i>HUANG Jin-Song, XIE Zheng-Wei, YAN Cong-Hua, and WEI Lian-Fu</i> .....	59-64
A New Solution with Torsion in Model of dS Gauge Theory of Gravity <i>HUANG Chao-Guang and MA Meng-Sen</i> .....	65-68
Time-Machine Solutions of Einstein's Equations with Electromagnetic Field <i>SHEN Ming and SUN Qing-You</i> .....	69-71

(Continued)

ISSN 0253-6102  
CN 11-2592/O3  
Price: 70.00 Yuan

ISSN 0253-6102



Entropy Corrections for a Charged Black Hole of String Theory  
*Alexis Larrañaga* ..... 72-74

Thermodynamics of DBI Black Holes in Anti-de Sitter Spacetime  
*JIA Dong-Yan, YUE Rui-Hong, and HUANG Shi-Ming* ..... 75-79

An Anyon Model in a Toric Honeycomb Lattice  
*LIANG Long and YU Yue* ..... 80-84

Special Bi-Solitons for Asymmetric Nizhnik–Novikov–Veselov Equation  
*LÜ Zhuo-Sheng* ..... 85-88

Self-Organized Criticality Analysis of Earthquake Model Based on Heterogeneous Networks  
*WANG Lin, ZHANG Gui-Qing, and CHEN Tian-Lun* ..... 89-94

Traffic Congestion Mechanism in Two Ramp Systems  
*ZHAO Xiao-Mei, SONG Gui-Cui, and SONG Yu-Kun* ..... 95-100

### Physics of Elementary Particles and Fields

Shape of Compact Toroidal Dimensions  $T_\theta^d$  and Casimir Effect on  $M^D \times T_\theta^d$  Spacetime  
*V.K. Oikonomou* ..... 101-110

Noether Symmetry and Noether Conserved Quantity of Nielsen Equation for Dynamical Systems of Relative Motion  
*XIE Yin-Li, YANG Xin-Fang, and JIA Li-Qun* ..... 111-114

### Nuclear Physics

Resonances-Excitation Calculation Studies Investigation of  $\Delta(3, 3)$  in Ground State of  $^{90}\text{Zr}$  Cold Finite Heavy Nucleus at Equilibrium and Under Large Compression  
*Mohammed H.E. Abu-Sei'leek* ..... 115-122

Chiral Magnetic Effect and Chiral Phase Transition  
*FU Wei-Jie, LIU Yu-Xin, and WU Yue-Liang* ..... 123-127

### Atomic and Molecular Physics

Generation of Broadband Attosecond Pulse via Controlling Quantum Path by Two Color Field in Long Wavelength Driving Regime  
*LUO Jiang-Hua* ..... 128-132

### Electromagnetism, Optics, Acoustics, Heat Transfer, Classical Mechanics, and Fluid Dynamics

Controllable Absorption and Dispersion Properties of an RF-driven Five-Level Atom in a Double-Band Photonic-Band-Gap Material  
*DING Chun-Ling, LI Jia-Hua, and YANG Xiao-Xue* ..... 133-142

### Physics of Gases, Plasmas, and Electric Discharges

Dust Acoustic Solitary Waves in Saturn F-ring's Region  
*E.K. El-Shewy, M.I. Abo el Maaty, H.G. Abdelwahed, and M.A. Elmessary* ..... 143-150

S.A. Khan and Arshad M. Mirza ..... 151-157

**Condensed Matter: Electronic Structure, Electrical, Magnetic, and Optical Properties**

Electronic Transport Calculations Using Maximally-Localized Wannier Functions

WANG Neng-Ping ..... 158-170

Tunneling Conductance in a Normal Metal/Ferromagnetic Superconductor Nano-Junction at a Finite Temperature

Hamidreza Emamipour and M.R. Abolhassani ..... 171-175

Phonon States and Dispersive Spectra of Polar Optical Phonons in Quasi-One-Dimensional Nanowires of Wurtzite ZnO and Zinc-Blend MgO Semiconductors

ZHANG Li ..... 176-184

**Interdisciplinary Physics and Related Areas of Science and Technology**

Trajectory Control of Scale-Free Dynamical Networks with Exogenous Disturbances

YANG Hong-Yong, ZHANG Shun, and ZONG Guang-Deng ..... 185-192