

CONTENTS

Preface	v
A Hypothesis of the Magnetostatic Turbulence and its Implications for Astrophysics	1
<i>D. D. Ryutov and B. A. Remington</i>	
Coherent Structures and Turbulence in Electron Plasmas	10
<i>M. Romé, G. Bettega, F. Cavaliere, F. de Luca, A. Illiberi and R. Pozzoli</i>	
Self-Organization of Non-Linear Vortices in Plasma Lens for Ion-Beam-Focusing in Crossed Radial Electrical and Longitudinal Magnetic Fields	20
<i>V. Maslov, I. Onishchenko and A. Goncharov</i>	
Collective Processes at Kinetic Levels in Dusty Plasmas	26
<i>P. K. Shukla and B. Eliasson</i>	
Magnetic Field Generation in Anisotropic Relativistic Plasma Regimes	39
<i>F. Pegoraro, F. Califano and D. del Sarto</i>	
Generation and Observation of Coherent, Long-Lived Structures in a Laser-Plasma Channel	49
<i>T. V. Liseykina, F. Ceccherini, F. Cornolti, E. Yu. Echkina, A. Macchi, F. Pegoraro, M. Borghesi, S. Kar, L. Romagnani, S. V. Bulanov, O. Willi and W. Galimberti</i>	

Theoretical Resolution of Magnetic Reconnection in High Energy Plasmas	59
<i>B. Coppi</i>	
The Power of Being Flat: Conformal Invariance in Two-Dimensional Turbulence	75
<i>A. Celani</i>	
Stochastic Resonance: From Climate to Biology	79
<i>R. Benzi</i>	
Energy-Enstrophy Theory for Coupled Fluid/Rotating Sphere System—Exact Solutions for Super-Rotations	96
<i>C. C. Lim</i>	
Thermophoretic Convection of Silica Nanoparticles	107
<i>A. Vailati, R. Cerbino, S. Mazzoni, F. Giavazzi and M. Giglio</i>	
Fluctuations and Pattern Formation in Fluids with Competing Interactions	117
<i>A. Imperio, D. Pini and L. Reatto</i>	
Alternatives and Paradoxes in Rotational and Gravitational Instabilities	127
<i>J. P. Goedbloed</i>	
Poynting Jets and MHD Winds from Rapidly Rotating Magnetized Stars	137
<i>R. V. E. Lovelace, M. M. Romanova, G. V. Ustyugova and A. V. Koldoba</i>	
Turbulence and Transport in Astrophysical Accretion Disks	144
<i>J. M. Stone</i>	
Gravitational Instabilities in Gaseous Discs and the Formation of Supermassive Black Hole Seeds at High Redshifts	154
<i>G. Lodato</i>	

Fine Structure and Dynamics of Sunspot Penumbra	164
<i>M. Ryutova, T. Berger and A. Title</i>	
Phase Mixing in Mond	177
<i>L. Ciotti, C. Nipoti and P. Londrillo</i>	
MHD Simulations of Jet Acceleration: The role of Disk Resistivity	187
<i>G. Bodo, C. Zanni, A. Ferrari and S. Massaglia</i>	
Hamiltonian Structure of a Collisionless Reconnection Model Valid for High and Low β Plasmas	197
<i>E. Tassi, P. J. Morrison and D. Grasso</i>	
Non Locality of Collective Effects Related to Dynamical Friction in Elliptical Galaxies	207
<i>S. E. Arena and G. Bertin</i>	
Evolution of a Satellite Dragged in by Dynamical Friction Towards the Center of a Galaxy	213
<i>S. E. Arena, G. Bertin and T. Liseykina</i>	
Investigation of Free Decaying Turbulence in a Trapped Pure Electron Plasma	219
<i>G. Bettega, D. Beretta, F. Cavaliere, F. de Luca, A. Illiberi, R. Pozzoli, M. Romé and M. Cavenago</i>	
Structures of Charge Sheaths and Transition Layers in Ion Sources	225
<i>M. Cavenago</i>	
Generation of Plasma Perturbations Under Collisionless Interaction of Super-Alfvénic Flows	231
<i>G. Dudnikova, T. Liseykina and K. Vshivkov</i>	
Program Package for 3D Pic Model of Plasma Fiber	237
<i>P. Kulhánek and D. Břeň</i>	
A Stochastic Approach to Generalized Quantum Dynamics with Collective Long-Range Forces	241
<i>A. Lavagno</i>	

Filling of Electrostatic Plasma Lens for Ion-Beam-Focusing by Electrons Against Direction of Electric Field Due to Non-Linear Vortex Behavior	247
<i>V. Maslov</i>	
Thermal Barrier Formation for Plasma Electrons and Ions in Kind of Connected Solitary Dip and Hump of Electric Potential Near ECR Points in Cylindrical Trap	250
<i>V. Maslov, S. Barchuk, A. Egorov, I. Onishchenko and M. Yu</i>	
Excitation of Solitary Wake-Field by Relativistic Electron Bunch and Laser Pulse	254
<i>V. Maslov, A. Egorov and I. Onishchenko</i>	
Enhancement of Ion Beam Charge States by Electron Vortices in a Plasma Optical Device	258
<i>V. Maslov, A. Goncharov and I. Brown</i>	
Wake-Field Mechanism of Ion Quasi-Crystal Formation in Nonequilibrium Dusty Plasmas of Technological Devices	262
<i>V. Maslov, A. Egorov, I. Onishchenko, N. Azarenkov and M. Yu</i>	
Spiral Perturbation in Separator for Extraction of Heavy Drops from Plasma Flow	266
<i>V. Maslov, I. Aksenov, A. Egorov and I. Onishchenko</i>	
Fractional Relaxation Equation from AC Universality in Disordered Solids	270
<i>A. V. Milovanov, K. Rypdal and J. J. Rasmussen</i>	
Vortices in Two-Dimensional Rotating Bose-Einstein Condensates	274
<i>T. Rindler-Daller</i>	
Studying Instability of 3D Collisionless Systems on Stochastic Trajectories	280
<i>V. N. Snytnikov and E. A. Kuksheva</i>	

Contribution of Large Amplitude Electric-Field Pulse and Bursts to Particle Acceleration in a High-Voltage Linear Plasma Discharge	286
<i>Y. Takeda</i>	
Linear Stability Analysis of Force-Free Equilibria Leading to Quasi-Single-Helicity States	290
<i>E. Tassi, R. J. Hastie and F. Porcelli</i>	
Particle Numerical Simulation of Plasma with Energy Loss by Radiation Calculated from Lorentz–Dirac Equation	295
<i>M. Žáček</i>	
List of Participants	301