In this book, which arose from an MSRI research workshop cosponsored by the Clay Mathematical Institute, leading experts give an overview of several areas of dynamical systems that have recently experienced substantial progress.

In symplectic geometry, a fast-growing field having its roots in classical mechanics, Cieliebak, Hofer, Latschev and Schlenk give a definitive survey of quantitative techniques and symplectic capacities, which have become a central research tool. Fisher’s survey on local rigidity of group actions is a broad and up-to-date account of a flourishing subject built on the fact that for actions of noncyclic groups, topological conjugacy commonly implies smooth conjugacy.

Other articles by Eigen, Feres, Kochergin, Krieger, Navarro, Pinto, Prasad, Rand and Robinson cover subjects in hyperbolic, parabolic and symbolic dynamics as well as ergodic theory. Among the specific areas of interest are random walks and billiards, diffeomorphisms and flows on surfaces, amenability and tilings.

The articles are complemented by a fifty-page commented problem list, compiled by the editor with the help of numerous specialists. Several sections of this list focus on problems beyond the areas covered in the surveys, and all are sure to inspire and guide further research.
Mathematical Sciences Research Institute
Publications

54

Dynamics, Ergodic Theory, and Geometry
Dedicated to Anatole Katok
2. Chern (ed.): *Seminar on Nonlinear Partial Differential Equations*
3. Lepowsky/Mandelstam/Singer (eds.): *Vertex Operators in Mathematics and Physics*
4. Kac (ed.): *Infinite Dimensional Groups with Applications*
6. Moore (ed.): *Group Representations, Ergodic Theory, Operator Algebras, and Mathematical Physics*
7. Chorin/Majda (eds.): *Wave Motion: Theory, Modelling, and Computation*
8. Gersten (ed.): *Essays in Group Theory*
10–11. Drasin/Earle/Gehring/Kra/Marden (eds.): *Holomorphic Functions and Moduli*
12–13. Ni/Peleter/Serrin (eds.): *Nonlinear Diffusion Equations and Their Equilibrium States*
15. Hochster/Huneke/Sally (eds.): *Commutative Algebra*
16. Ihara/Ribet/Serre (eds.): *Galois Groups over Q*
17. Concus/Finn/Hoffman (eds.): *Geometric Analysis and Computer Graphics*
19. Alperin: *Arboreal Group Theory*
20. Dazord/Weinstein (eds.): *Symplectic Geometry, Groupoids, and Integrable Systems*
21. Moschovakis (ed.): *Logic from Computer Science*
22. Ratiu (ed.): *The Geometry of Hamiltonian Systems*
23. Baumslag/Miller (eds.): *Algorithms and Classification in Combinatorial Group Theory*
24. Montgomery/Small (eds.): *Noncommutative Rings*
25. Akbulut/King: *Topology of Real Algebraic Sets*
26. Judah/Just/Woodin (eds.): *Set Theory of the Continuum*
27. Carlsson/Cohen/Hsiang/Jones: *Algebraic Topology and Its Applications*
28. Clemens/Kollár (eds.): *Current Topics in Complex Algebraic Geometry*
29. Nowakowski (ed.): *Games of No Chance*
30. Grove/Petersen (eds.): *Comparison Geometry*
31. Levy (ed.): *Flavors of Geometry*
32. Cecil/Chein (eds.): *Tight and Taut Submanifolds*
33. Axler/McCarthy/Sarason (eds.): *Holomorphic Spaces*
34. Ball/Milman (eds.): *Convex Geometric Analysis*
35. Levy (ed.): *The Eightfold Way*
36. Gavosto/Krantz/McCallum (eds.): *Contemporary Issues in Mathematics Education*
37. Schneider/Siu (eds.): *Several Complex Variables*
38. Billera/Björner/Green/Simion/Stanley (eds.): *New Perspectives in Geometric Combinatorics*
39. Haskell/Pillay/Steinhorn (eds.): *Model Theory, Algebra, and Geometry*
40. Bleher/Its (eds.): *Random Matrix Models and Their Applications*
41. Schneps (ed.): *Galois Groups and Fundamental Groups*
42. Nowakowski (ed.): *More Games of No Chance*
43. Montgomery/Schneider (eds.): *New Directions in Hopf Algebras*
44. Buhler/Stevenhagen (eds.): *Algorithmic Number Theory*
45. Jensen/Ledet/Yui: *Generic Polynomials: Constructive Aspects of the Inverse Galois Problem*
46. Rockmore/Healy (eds.): *Modern Signal Processing*
47. Uhlmann (ed.): *Inside Out: Inverse Problems and Applications*
49. Darmon/Zhang (eds.): *Heegner Points and Rankin L-Series*
50. Bao/Bryant/Chein/Shen (eds.): *A Sampler of Riemann–Finsler Geometry*
51. Avramov/Green/Huneke/Smith/Sturmfels (eds.): *Trends in Commutative Algebra*
52. Goodman/Pach/Welzl (eds.): *Combinatorial and Computational Geometry*
53. Schoenfeld (ed.): *Assessing Mathematical Proficiency*
54. Hasselblatt (ed.): *Dynamics, Ergodic Theory, and Geometry*

Volumes 1–4, 6–8 and 10–27 are published by Springer-Verlag