

# CONTENTS

Foreword to the American edition . . . . .	vii
Foreword to the Soviet edition . . . . .	viii
Introduction . . . . .	1
<b>Chapter I. General properties of dynamical systems</b>	
§ 1. General definition of a dynamical system . . . . .	5
§ 2. Simplest properties of dynamical systems . . . . .	8
§ 3. The classification of motions and trajectories . . . . .	12
§ 4. Invariant sets . . . . .	15
§ 5. Theorems on rest points . . . . .	17
§ 6. Dynamical systems on the real line. The isomorphism of dynamical systems . . . . .	21
<b>Chapter II. Limiting properties of dynamical systems</b>	
§ 7. Dynamical limit points. Properties of limit sets . . . . .	28
§ 8. Lagrange stability . . . . .	31
§ 9. The classification of motions according to the properties of dynamical limit sets . . . . .	39
§ 10. Examples of Poisson stable motions on the torus . . . . .	43
§ 11. Properties of Poisson stable points and motions . . . . .	48
<b>Chapter III. Nonwandering points. Central motions</b>	
§ 12. Wandering and nonwandering points . . . . .	54
§ 13. Properties of the set of nonwandering points . . . . .	56
§ 14. The set of central motions . . . . .	58
§ 15. Minimal center of attraction . . . . .	60

<b>Chapter IV. Minimal sets and recurrent motions</b>	
§ 16. Minimal sets . . . . .	68
§ 17. Almost recurrent motions and recurrent motions . . .	70
§ 18. Interrelationships among minimal sets, almost recurrent motions and recurrent motions . . . . .	72
§ 19. The Shcherbakov classification of Poisson stable motions. Pseudorecurrent motions . . . . .	74
§ 20. The Bebutov dynamical system . . . . .	81
<b>Chapter V. Almost periodic motions. Lyapunov stability</b>	
§ 21. Uniformly Poisson stable motions and almost periodic motions . . . . .	92
§ 22. Lyapunov stability. . . . .	95
§ 23. Lyapunov stable motions on the real line . . . . .	102
§ 24. Interrelationship between periodicity and Lyapunov stability . . . . .	105
§ 25. Motions in dynamical limit sets . . . . .	112
§ 26. Stability of rest points . . . . .	120
<b>Chapter VI. Generalized theory of dynamical systems</b>	
§ 27. General dynamical systems. Topological transformation groups . . . . .	131
§ 28. Discrete dynamical systems . . . . .	134
§ 29. Partially ordered dynamical systems . . . . .	137
§ 30. Dispersive dynamical systems . . . . .	139
<b>Literature</b> . . . . .	145
<b>Index</b> . . . . .	157