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## EQUILIBRIUM STATES

9.1. The reduction theorems. The Lyapunov functions

9.2. The first critical case ; 9.3. The second critical case

## Chapter 10. THE BEHAVIOR OF DYNAMICAL SYSTEMS ON STABILITY BOUNDARIES OF PERIODIC TRAJECTORIES

; 10.1. The reduction of the Poincare map. Lyapunov functions

10.2. The first critical case 10.3. The second critical case

; 10.4. The third critical case. Weak resonances ; 10.5. Strong resonances

; 10.6. Passage through strong resonance on stability boundary

; 10.7. Additional remarks on resonances

## Chapter 11. LOCAL BIFURCATIONS ON THE ROUTE OVER STABILITY BOUNDARIES

### Sommario/riassunto

Bifurcation and chaos has dominated research in nonlinear dynamics for over two decades, and numerous introductory and advanced books have been published on this subject. There remains, however, a dire need for a textbook which provides a pedagogically appealing yet rigorous mathematical bridge between these two disparate levels of exposition. This book has been written to serve that unfulfilled need. Following the footsteps of Poincare, and the renowned Andronov school of nonlinear oscillations, this book focuses on the *qualitative* study of *high-dimensional* nonlinear dynamical