1. **Record Nr.**   UNINA9910996490703321

   Autore   Rocha Victor H. L

   Titolo   Lyapunov Stability of Transformation Semigroups / / by Victor H. L. Rocha, Josiney A. Souza

   Pubbl/distr/stampa Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2025

   ISBN   3-031-85761-5

   Edizione   [1st ed. 2025.]

   Descrizione fisica 1 online resource (XVIII, 228 p. 14 illus.)

   Collana   Latin American Mathematics Series, , 2524-6763

   Disciplina   515.39

   Soggetti   Dynamics
                         System theory
                         Control theory
                         Dynamical Systems
                         Systems Theory, Control
                         Grups de transformacions
                         Semigrups
                         Llibres electrònics

   Lingua di pubblicazione Inglese

   Formato   Materiale a stampa

   Livello bibliografico Monografia

   Nota di contenuto Preface -- Introduction -- Semigroup actions -- Attraction and Lyapunov stability -- Orbital maps -- Lyapunov stability on fiber bundles -- Fenichel's uniformity lemma -- Stability and controllability -- Higher stability and generalized recurrence -- Fiber bundles -- References -- Index.

   Sommario/riassunto This book presents recent research results on Lyapunov stability and attraction for semigroup actions in a pedagogical format, providing the reader with numerous modern ideas and mathematical formulations for dynamical concepts in the transformation group theory. In recent decades, many fundamental concepts of dynamical systems have been extended to the general framework of transformation semigroups. Limit sets, attractors, isolated invariant sets, prolongational limit sets, and stable sets now have semigroup theoretical analogues. This monograph consolidates recent advancements in this field in a way that makes it accessible to graduate students. An effort was made to relate the presented results to important recurrence notions, for contextual

clarity. A rudimentary understanding of group theory and topology, including the concepts of semigroup action, orbit, fiber bundle, compactness, and connectedness, is a prerequisite for reading this text. As a valuable resource for research projects and academic dissertations on topological dynamics, geometry, and mathematical analysis, this work can potentially open new avenues for further research.