1. Record Nr. UNINA9910825910603321

Autore	Pajitnov Andrei V
Titolo	Circle-valued Morse theory [[electronic resource] /] / Andrei V. Pajitnov
Pubbl/distr/stampa	Berlin ; ; New York, : De Gruyter, c2006
ISBN	1-282-19426-7 9786612194269 3-11-019797-9
Descrizione fisica	1 online resource (464 pages)
Collana	De Gruyter studies in mathematics, , 0179-0986 ; ; 32
Classificazione	SK 350
Disciplina	514/.74
Soggetti	Morse theory Manifolds (Mathematics)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. [437]-444) and index.
Nota di contenuto	Front matter -- Contents -- Preface -- Introduction -- Part 1. Morse functions and vector fields on manifolds -- CHAPTER 1. Vector fields and C0 topology -- CHAPTER 2. Morse functions and their gradients -- CHAPTER 3. Gradient flows of real-valued Morse functions -- Part 2. Transversality, handles, Morse complexes -- CHAPTER 4. The Kupka-Smale transversality theory for gradient flows -- CHAPTER 5. Handles -- CHAPTER 6. The Morse complex of a Morse function -- Part 3. Cellular gradients -- CHAPTER 7. Condition (C) -- CHAPTER 8. Cellular gradients are C0-generic -- CHAPTER 9. Properties of cellular gradients -- Part 4. Circle-valued Morse maps and Novikov complexes -- CHAPTER 10. Completions of rings, modules and complexes -- CHAPTER 11. The Novikov complex of a circle-valued Morse map -- CHAPTER 12. Cellular gradients of circle-valued Morse functions and the Rationality Theorem -- CHAPTER 13. Counting closed orbits of the gradient flow -- CHAPTER 14. Selected topics in the Morse-Novikov theory -- Backmatter
Sommario/riassunto	In the early 1920's M. Morse discovered that the number of critical points of a smooth function on a manifold is closely related to the topology of the manifold. This became a starting point of the Morse theory which is now one of the basic parts of differential topology. Circle-valued Morse theory originated from a problem in

hydrodynamics studied by S. P. Novikov in the early 1980's. Nowadays, it is a constantly growing field of contemporary mathematics with applications and connections to many geometrical problems such as Arnold's conjecture in the theory of Lagrangian intersections, fibrations of manifolds over the circle, dynamical zeta functions, and the theory of knots and links in the three-dimensional sphere. The aim of the book is to give a systematic treatment of geometric foundations of the subject and recent research results. The book is accessible to first year graduate students specializing in geometry and topology.