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Nota di contenuto	Contents; 3.2 Weakly harmonic maps in dimension two; 3.3 Stationary harmonic maps in higher dimensions; Preface; Organization of the book; Acknowledgements; 1 Introduction to harmonic maps; 1.1 Dirichlet principle of harmonic maps; 1.2 Intrinsic view of harmonic maps; 1.3 Extrinsic view of harmonic maps; 1.4 A few facts about harmonic maps; 1.5 Bochner identity for harmonic maps; 1.6 Second variational formula of harmonic maps; 2 Regularity of minimizing harmonic maps; 2.1 Minimizing harmonic maps in dimension two; 2.2 Minimizing harmonic maps in higher dimensions 2.3 Federer's dimension reduction principle 2.4 Boundary regularity for minimizing harmonic maps; 2.5 Uniqueness of minimizing tangent maps; 2.6 Integrability of Jacobi fields and its applications; 3 Regularity of stationary harmonic maps; 3.1 Weakly harmonic maps into regular balls; 3.4 Stable-stationary harmonic maps into spheres; 4 Blow up analysis of stationary harmonic maps; 4.1 Preliminary analysis; 4.2 Rectifiability of defect measures; 4.3 Strong convergence and interior gradient estimates; 4.4 Boundary gradient estimates; 5 Heat flows to Riemannian manifolds of NPC; 5.1 Motivation 5.2 Existence of short time smooth solutions 5.3 Existence of global

smooth solutions under $RN < 0$; 5.4 An extension of Eells-Sampson's theorem; 6 Bubbling analysis in dimension two; 6.1 Minimal immersion of spheres; 6.2 Almost smooth heat flows in dimension two; 6.3 Finite time singularity in dimension two; 6.4 Bubbling phenomena for 2-D heat flows; 6.5 Approximate harmonic maps in dimension two; 7 Partially smooth heat flows; 7.1 Monotonicity formula and a priori estimates; 7.2 Global smooth solutions and weak compactness; 7.3 Finite time singularity in dimensions at least three; 7.4 Nonuniqueness of heat flow of harmonic maps; 7.5 Global weak heat flows into spheres; 7.6 Global weak heat flows into general manifolds; 8 Blow up analysis on heat flows; 8.1 Obstruction to strong convergence; 8.2 Basic estimates; 8.3 Stratification of the concentration set; 8.4 Blow up analysis in dimension two; 8.5 Blow up analysis in dimensions $n > 3$; 9 Dynamics of defect measures in heat flows; 9.1 Generalized varifolds and rectifiability; 9.2 Generalized varifold flows and Brakke's motion; 9.3 Energy quantization of the defect measure; 9.4 Further remarks; Bibliography; Index

Sommario/riassunto

This book provides a broad yet comprehensive introduction to the analysis of harmonic maps and their heat flows. The first part of the book contains many important theorems on the regularity of minimizing harmonic maps by Schoen-Uhlenbeck, stationary harmonic maps between Riemannian manifolds in higher dimensions by Evans and Bethuel, and weakly harmonic maps from Riemannian surfaces by Helein, as well as on the structure of a singular set of minimizing harmonic maps and stationary harmonic maps by Simon and Lin. The second part of the book contains a systematic coverage of heat flow of harmon
