

1. Record Nr.	UNINA9910254073203321
Autore	Beck Lisa
Titolo	Elliptic regularity theory : a first course / / by Lisa Beck
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2016
ISBN	3-319-27485-6
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (214 p.)
Collana	Lecture Notes of the Unione Matematica Italiana, , 1862-9113 ; ; 19
Disciplina	515.353
Soggetti	Partial differential equations Calculus of variations Partial Differential Equations Calculus of Variations and Optimal Control; Optimization
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 and index.
Nota di contenuto	Preliminaries -- Introduction to the Setting -- The Scalar Case -- Foundations for the Vectorial Case -- Partial Regularity Results for Quasilinear Systems.
Sommario/riassunto	These lecture notes provide a self-contained introduction to regularity theory for elliptic equations and systems in divergence form. After a short review of some classical results on everywhere regularity for scalar-valued weak solutions, the presentation focuses on vector-valued weak solutions to a system of several coupled equations. In the vectorial case, weak solutions may have discontinuities and so are expected, in general, to be regular only outside of a set of measure zero. Several methods are presented concerning the proof of such partial regularity results, and optimal regularity is discussed. Finally, a short overview is given on the current state of the art concerning the size of the singular set on which discontinuities may occur. The notes are intended for graduate and postgraduate students with a solid background in functional analysis and some familiarity with partial differential equations; they will also be of interest to researchers working on related topics.