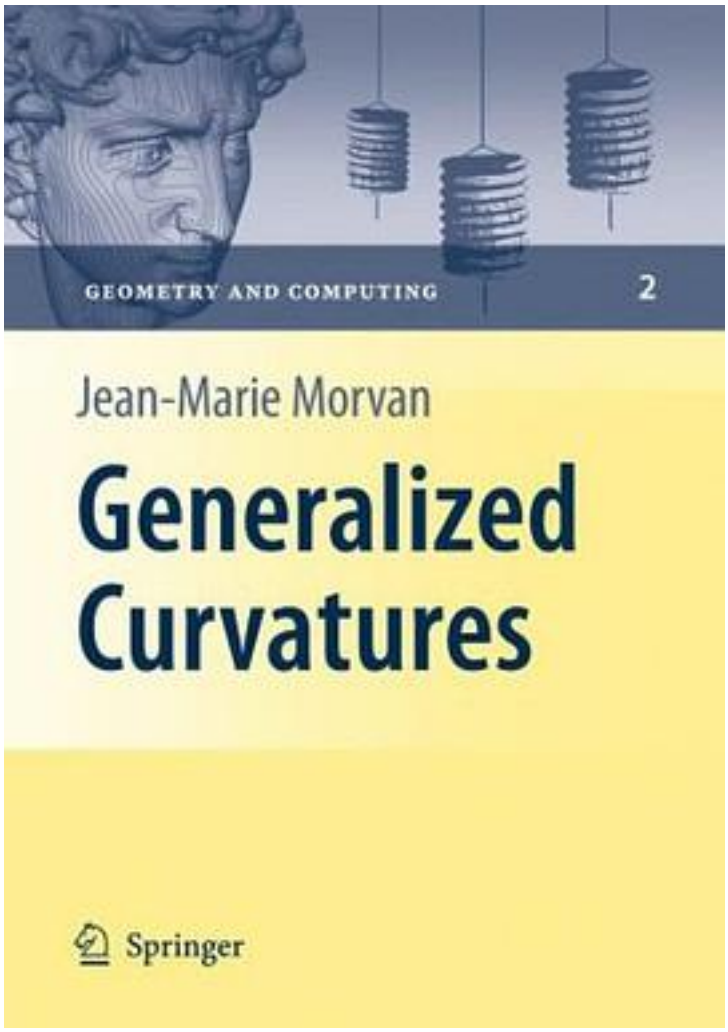
Generalized Curvatures (Geometry and Computing)



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The intent of this book is to set the modern foundations of the theory of generalized curvature measures. This subject has a long history, beginning with J. Steiner (1850), H. Weyl (1939), H. Federer (1959), P. Wintgen (1982), and continues today with young and brilliant mathematicians. In the last decades, a renewal of interest in mathematics as well as computer science has arisen (finding new applications in computer graphics, medical imaging, computational geometry, visualization).Following a historical and didactic approach, the book introduces the mathematical background of the subject, beginning with curves and surfaces, going on with convex subsets, smooth submanifolds, subsets of positive reach, polyhedra and triangulations, and ending with surface reconstruction. We focus on the theory of normal cycle, which allows to compute and approximate curvature measures of a large class of smooth or discrete objects of the Euclidean space. We give explicit computations when the object is a 2 or 3 dimensional polyhedron.This book can serve as a textbook to any mathematician or computer scientist, engineer or researcher who is interested in the theory of curvature measures.

作者介绍:

目录:

标签

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