

# Contents

## Chapter 1: Basic Tools for Modern Geometric Computing

Computer Geometry and Topological Classification of Integrable Hamiltonian Differential Equations: Visualization of Concrete Physical Examples A.T. Fomenko . . . . .	3
Interdisciplinary Techniques, Toolkits and Models for Scientific Visualization R.A. Earnshaw . . . . .	11
Topology and Visualization: From Generic Singularities to Combinatorial Shape Modelling Y.L. Kergosien . . . . .	31

## Chapter 2: Analyses of Visual Information

Polyhedral Surface Decomposition Based on Curvature Analysis B. Falcidieno, M. Spagnuolo . . . . .	57
The Conjugate Classification of the Kernel Form of the Hexagonal Grid Z.J. Zheng, A.J. Maeder . . . . .	73
Motions of Flexible Objects D. Roseman . . . . .	91
Shape Description and Classification Based on Extremal Points and Their Relations Y. Nakajima, H. Nishida, S. Mori . . . . .	121
Visualisation of Hyperobjects in Hgram-Space by Computers Y.M. Pok, Y.K. Huen . . . . .	141

## Chapter 3: Applications of Modern Geometry

Computation of Singularities for Engineering Design N.M. Patrikalakis, T. Maekawa, E.C. Sherbrooke, J.F. Zhou . . .	167
A Geographical Database System Based on the Homotopy Model T. Ikeda, T.L. Kunii, Y. Shinagawa, M. Ueda . . . . .	193
A Case Study for Building a Database and 3-D Visualization in Geomorphology M. Ueda, T. Ikeda, T.L. Kunii, Y. Shinagawa . . . . .	207

Using Surface Coding to Detect Errors in Surface Reconstruction Y. Shinagawa, T.L. Kunii . . . . .	227
<b>Chapter 4: Supercomputing for Modern Geometry</b>	
The Development of the Supercomputer System Electronica SS BIS V.A. Melnikov, Y.I. Mitropolski . . . . .	243
Automatic Parallelization of Programs for MIMD Computers V.A. Melnikov, B.M. Shabanov, P.N. Telegin, A.P. Chernjaev . . . . .	253
Workshop Organization . . . . .	265
Author Index . . . . .	266
Citation Index . . . . .	267
Keyword Index . . . . .	271