

Contents

Chapter 1.	Singularities, Bifurcations, and Catastrophe Theories	1
Chapter 2.	Whitney's Singularity Theory	3
Chapter 3.	Applications of Whitney's Theory	7
Chapter 4.	A Catastrophe Machine	10
Chapter 5.	Bifurcations of Equilibrium States	14
Chapter 6.	Loss of Stability of Equilibrium and the Generation of Auto-Oscillations	20
Chapter 7.	Singularities of Stability Boundaries and the Principle of the Fragility of Good Things	27
Chapter 8.	Caustics, Wave Fronts and Their Metamorphoses	29
Chapter 9.	Large Scale Distribution of Matter in the Universe	39
Chapter 10.	Singularities in Optimization Problems, the Maxima Function	43
Chapter 11.	Singularities of Accessibility Boundaries	47
Chapter 12.	Smooth Surfaces and Their Projections	57
Chapter 13.	Problems of By-Passing Obstacles	63
Chapter 14.	Symplectic and Contact Geometries	66
Chapter 15.	The Mystics of the Catastrophe Theory	75
References	79