Contents

Preface	ix
Symposium Speakers	xi
Contributors	xiii
Singular Minimizers and their Significance in Elasticity J. M. Ball	1
Nonlinear Elliptic Equations Involving the Critical Sobolev	
Exponent—Survey and Perspectives	17
Haïm Brezis	
The Differentiability of the Free Boundary for the n-Dimensional	
Porous Media Equation	37
Luis A. Caffarelli	
Oscillations and Concentrations in Solutions to the Equations of	
Mechanics	43
Ronald J. DiPerna	
The Connection Between the Navier-Stokes Equations, Dynamical	
Systems, and Turbulence Theory	55
Ciprian Foias and Roger Témam	
Blow-Up of Solutions of Nonlinear Evolution Equations	75
Avner Friedman	
Coherence and Chaos in the Kuramoto-Velarde Equation	89
James M. Hyman and Basil Nicolaenko	
Einstein Geometry and Hyperbolic Equations	113
S. Klainerman	
Recent Progress on First Order Hamilton-Jacobi Equations	145
PL. Lions	150
The Focusing Singularity of the Nonlinear Schrödinger Equation	159
B. LeMesurier, G. Papanicolaou, C. Sulem, and PL. Sulem	
A Probabilistic Approach to Finding Estimates for the Heat Kernel	202
Associated with a Hörmander Form Operator	203
Daniel W. Stroock	

viii	Contents
Discontinuities and Oscillations Luc C. Tartar	211
The Structure of Manifolds with Positive Scalar Curvature Richard Schoen and Shing-Tung Yau	235
Index	243