

Contents

I. Sobolev Type Inequalities

Vladimir Maz'ya Ed.

My Love Affair with the Sobolev Inequality	1
<i>David R. Adams</i>	
Maximal Functions in Sobolev Spaces	25
<i>Daniel Aalto and Juha Kinnunen</i>	
Hardy Type Inequalities Via Riccati and Sturm–Liouville Equations	69
<i>Sergey Bobkov and Friedrich Götze</i>	
Quantitative Sobolev and Hardy Inequalities, and Related Symmetrization Principles	87
<i>Andrea Cianchi</i>	
Inequalities of Hardy–Sobolev Type in Carnot–Carathéodory Spaces ...	117
<i>Donatella Danielli, Nicola Garofalo, and Nguyen Cong Phuc</i>	
Sobolev Embeddings and Hardy Operators	153
<i>David E. Edmunds and W. Desmond Evans</i>	
Sobolev Mappings between Manifolds and Metric Spaces	185
<i>Piotr Hajlasz</i>	
A Collection of Sharp Dilation Invariant Integral Inequalities for Differentiable Functions	223
<i>Vladimir Maz'ya and Tatyana Shaposhnikova</i>	
Optimality of Function Spaces in Sobolev Embeddings	249
<i>Luboš Pick</i>	
On the Hardy–Sobolev–Maz'ya Inequality and Its Generalizations	281
<i>Yehuda Pinchover and Kiril Tintarev</i>	
Sobolev Inequalities in Familiar and Unfamiliar Settings	299
<i>Laurent Saloff-Coste</i>	
A Universality Property of Sobolev Spaces in Metric Measure Spaces ..	345
<i>Nageswari Shanmugalingam</i>	
Cocompact Imbeddings and Structure of Weakly Convergent Sequences	361
<i>Kiril Tintarev</i>	
Index	377

II. Applications in Analysis and Partial Differential Equations

Vladimir Maz'ya Ed.

On the Mathematical Works of S.L. Sobolev in the 1930s	1
<i>Vasilii Babich</i>	
Sobolev in Siberia	11
<i>Yuri Reshetnyak</i>	
Boundary Harnack Principle and the Quasihyperbolic Boundary Condition	19
<i>Hiroaki Aikawa</i>	
Sobolev Spaces and their Relatives: Local Polynomial Approximation Approach	31
<i>Yuri Brudnyi</i>	
Spectral Stability of Higher Order Uniformly Elliptic Operators	69
<i>Victor Burenkov and Pier Domenico Lamberti</i>	
Conductor Inequalities and Criteria for Sobolev–Lorentz Two-Weight Inequalities	103
<i>Serban Costea and Vladimir Maz'ya</i>	
Besov Regularity for the Poisson Equation in Smooth and Polyhedral Cones	123
<i>Stephan Dahlke and Winfried Sickel</i>	
Variational Approach to Complicated Similarity Solutions of Higher Order Nonlinear Evolution Partial Differential Equations	147
<i>Victor Galaktionov, Enzo Mitidieri, and Stanislav Pokhozhaev</i>	
$L_{q,p}$ -Cohomology of Riemannian Manifolds with Negative Curvature ...	199
<i>Vladimir Gol'dshtein and Marc Troyanov</i>	
Volume Growth and Escape Rate of Brownian Motion on a Cartan–Hadamard Manifold	209
<i>Alexander Grigor'yan and Elton Hsu</i>	
Sobolev Estimates for the Green Potential Associated with the Robin–Laplacian in Lipschitz Domains Satisfying a Uniform Exterior Ball Condition	227
<i>Tünde Jakab, Irina Mitrea, and Marius Mitrea</i>	
Properties of Spectra of Boundary Value Problems in Cylindrical and Quasicylindrical Domains	261
<i>Sergey Nazarov</i>	
Estimates for Completely Integrable Systems of Differential Operators and Applications	311
<i>Yuri Reshetnyak</i>	

Counting Schrödinger Boundstates: Semiclassics and Beyond	329
<i>Grigori Rozenblum and Michael Solomyak</i>	
Function Spaces on Cellular Domains	355
<i>Hans Triebel</i>	
Index	387

III. Applications in Mathematical Physics

Victor Isakov Ed.

Preface	1
<i>Victor Isakov</i>	
Geometrization of Rings as a Method for Solving Inverse Problems	5
<i>Mikhail Belishev</i>	
The Ginzburg–Landau Equations for Superconductivity with Random Fluctuations	25
<i>Andrei Fursikov, Max Gunzburger, and Janet Peterson</i>	
Carleman Estimates with Second Large Parameter for Second Order Operators	135
<i>Victor Isakov and Nanhee Kim</i>	
Sharp Spectral Asymptotics for Dirac Energy	161
<i>Victor Ivrii</i>	
Linear Hyperbolic and Petrowski Type PDEs with Continuous Boundary Control \rightarrow Boundary Observation Open Loop Map: Implication on Nonlinear Boundary Stabilization with Optimal Decay Rates	187
<i>Irena Lasiecka and Roberto Triggiani</i>	
Uniform Asymptotics of Green's Kernels for Mixed and Neumann Problems in Domains with Small Holes and Inclusions	277
<i>Vladimir Maz'ya and Alexander Movchan</i>	
Finsler Structures and Wave Propagation	317
<i>Michael Taylor</i>	
Index	335