

Applied Analysis, 3rd Edition

Mathematics for Science, Technology, Engineering



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ABOUT THE BOOK

This book is to be a new edition of Applied Analysis. Several fundamental materials of applied and theoretical sciences are added, which are needed by the current society, as well as recent developments in pure and applied mathematics. New materials in the basic level are the mathematical modelling using ODEs in applied sciences, elements in Riemann geometry in accordance with tensor analysis used in continuum mechanics, combining engineering and modern mathematics, detailed description of optimization, and real analysis used in the recent study of PDEs. Those in the advance level are the integration of ODEs, inverse Sturm Liouville problems, interface vanishing of the Maxwell system, method of gradient inequality, diffusion geometry, mathematical oncology. Several descriptions on the analysis of Smoluchowski-Poisson equation in two space dimension are corrected and extended, to ensure quantized blowup mechanism of this model, particularly, the residual vanishing both in blowup solution in finite time with possible collision of sub-collapses and blowup solutions in infinite time without it.

READERSHIP

Undergraduate students studying mathematics, physics, chemistry, engineering; graduate students specialized in mathematical analysis, real analysis, theory of partial differential equations; researches and specialists in the theory of nonlinear partial differential equations.

CONTENTS

- Mathematical Modeling
- Field Formation
- Objects and Coordinates
- Languages of Modern Geometry
- Optimizations

- Calculus of Variation
- Infinite-Dimensional Analysis
- Scattering
- Random Motion of Particles
- Linear PDE
- Real Analysis in PDE
- Nonlinear PDE
- Appendix A: Catalogue of Mathematical Analysis
- Appendix B: An Elliptic-Parabolic System
- Appendix C: Commentaries

ABOUT THE AUTHOR

Takashi Suzuki, Professor. Applied Analysis, more than 250 papers and 10 English monographs. Founder of Mathematical Oncology. Associated Editors of *Differential Integral Equations*, *Royal Society Open Science Journal*, etc.

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