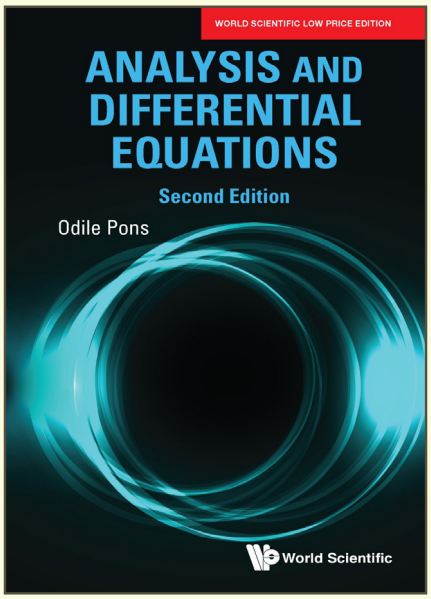
Analysis and Differential Equations
2nd Edition



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ISBN	9798886131031
Extent	304pp
Binding	Paperback
Year	2024
Price	Rs. 1395

ABOUT THE BOOK

The book presents advanced methods of integral calculus and optimization, the classical theory of ordinary and partial differential equations and systems of dynamical equations. It provides explicit solutions of linear and nonlinear differential equations, and implicit solutions with discrete approximations.

The main changes of this second edition are: the addition of theoretical sections proving the existence and the unicity of the solutions for linear differential equations on real and complex spaces and for nonlinear differential equations defined by locally Lipschitz functions of the derivatives, as well as the approximations of nonlinear parabolic, elliptic, and hyperbolic equations with locally differentiable operators which allow to prove the existence of their solutions; furthermore, the behavior of the solutions of differential equations under small perturbations of the initial condition or of the differential operators is studied.

READERSHIP

Undergraduate and graduate students in mathematics courses of analysis and differential calculus; researchers in mathematics.

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ABOUT THE AUTHOR

Odile Pons, retired director of research of the department of Mathematics of INRA. She obtained her PhD in mathematics and the habilitation in mathematics (probability-statistics) at the University of Paris (France). She mainly published articles in peer reviewed journals and books in probability and mathematical statistics. Her books published by World Scientific include *Functional Estimation for Density, Regression Models and Processes* (2011); *Statistical Tests of Nonparametric Hypotheses: Asymptotic Theory* (2014); *Analysis and Differential Equations* (2015); *Estimations and Tests in Change-Point Models* (2018); *Orthonormal Series Estimators* (2020); *Probability and Stochastic Processes: Work Examples* (2020); *Inequalities in Analysis and Probability, 3rd edition* (2022).