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Nota di contenuto	Preface -- Part I, 85th Birthday Lecture: J. Kisyski, Topologies in the Set of Rapidly Decreasing Distributions -- Part II, Theory: Y. A. Butko, The method of Chernoff approximation -- A. Hussein and Delio Mugnolo, Laplacians with point interactions – expected and unexpected spectral properties -- S. Kosowicz, Remarks on characterization of generators of bounded C_0 -semigroups -- S. Trostorff , Semigroups associated with differential-algebraic equations -- S. A. Zagrebina and N. N. Solovyova, Positive degenerate holomorphic groups of the operators and their applications -- Part III, Applications: B. Andreianov and M. D. Rosini, Microscopic selection of solutions to scalar conservation laws with discontinuous flux in the context of vehicular traffic -- A. Bartomiejczyk and M. Wrzosek, Newton's method for the

McKendrick-von Foerster equation -- M. Bongarti, S. Charoenphon and I. Lasiecka, Singular thermal relaxation limit for the Moore-Gibson-Thompson equation arising in propagation of acoustic waves -- R. Brodnicka and H. Gacki, Applications of the Kantorovich-Rubinstein maximum principle in the theory of Boltzmann equations -- E. V. Bychkov, Propagators of the Sobolev Equations -- G. Ruiz Goldstein, J. A. Goldstein, D. Guidetti and S. Romanelli, The Fourth Order Wentzell Heat Equation -- P. Kalita, G. ukaszewicz, and J. Siemianowski, Nonlinear semigroups and their perturbations in hydrodynamics. Three examples -- A. Karpowicz and H. Leszczyski, Method of lines for a kinetic equation of swarm formation -- A. V. Keller and M. A. Sagadeeva, Degenerate Matrix Groups and Degenerate Matrix Flows in Solving the Optimal Control Problem for Dynamic Balance Models of the Economy -- O. G. Kitaeva, D. E. Shafranov and G. A. Sviridyuk, Degenerate holomorphic semigroups of operators in spaces of K -"noises" on Riemannian manifolds -- A. C.S. Ng, Optimal energy decay in a one-dimensional wave-heat-wave system -- Wha-Suck Lee and C. Le Roux, Implicit convolution Fokker-Planck equations: Extended Feller convolution -- K. Pichór, R. Rudnicki, Asymptotic properties of stochastic semigroups with applications to piecewise deterministic Markov processes -- L. Paunonen, On Polynomial Stability of Coupled Partial Differential Equations in 1D -- K. V. Vasiuchkova, N. A. Manakova and G. A. Sviridyuk, Degenerate Nonlinear Semigroups of Operators and Their Applications -- R. Triggiani, Sharp Interior and Boundary Regularity of the SMGTJ-equation with Dirichlet or Neumann Boundary Control -- A. A. Zamyshlyayeva and A. V. Lut, Inverse Problem for The Boussinesq – Love Mathematical Model -- A. A. Zamyshlyayeva, O. N. Tsypchenkova, Optimal control of solutions to Showalter –Sidorov problem for a high order Sobolev type equation with additive "noise".

Sommario/riassunto

This book features selected and peer-reviewed lectures presented at the 3rd Semigroups of Operators: Theory and Applications Conference, held in Kazimierz Dolny, Poland, in October 2018 to mark the 85th birthday of Jan Kisyski. Held every five years, the conference offers a forum for mathematicians using semigroup theory to discover what is happening outside their particular field of research and helps establish new links between various sub-disciplines of semigroup theory, stochastic processes, differential equations and the applied fields. The book is intended for researchers, postgraduate and senior students working in operator theory, partial differential equations, probability and stochastic processes, analytical methods in biology and other natural sciences, optimisation and optimal control. The theory of semigroups of operators is a well-developed branch of functional analysis. Its foundations were laid at the beginning of the 20th century, while Hille and Yosida's fundamental generation theorem dates back to the forties. The theory was originally designed as a universal language for partial differential equations and stochastic processes but, at the same time, it started to become an independent branch of operator theory. Today, it still has the same distinctive character: it develops rapidly by posing new 'internal' questions and, in answering them, discovering new methods that can be used in applications. On the other hand, it is being influenced by questions from PDE's and stochastic processes as well as from applied sciences such as mathematical biology and optimal control and, as a result, it continually gathers new momentum. However, many results, both from semigroup theory itself and the applied sciences, are phrased in discipline-specific languages and are hardly known to the broader community.
