Book Reviews

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BOOK REVIEWS

J. J. Duistermaat: FOURIER INTEGRAL OPERATORS. Birkhäuser Boston 1996, 142 pages.

This book is based on a course of the author on Fourier integral operators presented in 1970-71. The advantage of the presentation is the introduction to symplectic differential geometry which helps to pass from local definitions to global calculus. The main analytic tools (e.g. the method of stationary phase going back to Stokes, wave fronts of a distribution, ...) are presented and some important applications are given (the Cauchy problem for strictly hyperbolic differential operators with C^∞ coefficients and a study of oscillatory asymptotic solutions of a partial differential equation with large parameters).

This work is suitable for mathematicians and physicists working in wave propagation and related fields. There is a quite extensive and complete part devoted to symplectic geometry which is important for the presented invariant theory of Fourier integral operators.

The style of presentation makes the book accessible to a broad audience even of nonspecialists.

Štefan Schwabik, Praha

A. B. Antonevich: LINEAR FUCTIONAL EQUATIONS. OPERATOR APPROACH. Birkhäuser Verlag Basel 1996, 188 pages, DM 148.–

This book is the translation from Russian of the original book which appeared in 1988 in Minsk.

The book is devoted to the study of linear functional equations of the form

$$\sum_{k=1}^{m} a_k(x)u(\alpha_k(x)) = f(x),$$

where the unknown function u has to belong to a given space $F(X)$ of functions on a set X, $\alpha_k : X \to X$ are given mappings, a_k and f are given functions. The investigations are based on the study of functional operators $bu(x) = \sum_{k=1}^{m} a_k(x)u(\alpha_k(x))$ by functional-analytic methods.

Special attention is paid to spectral properties of functional operators, formulas for the Noether index are derived. Applications are described e.g. for functional-differential equations, nonlocal boundary value problems, convolution equations and others.

The book can be useful to mathematicians as well as to advanced students interested in functional analysis, differential and integral equations.

Štefan Schwabik, Praha