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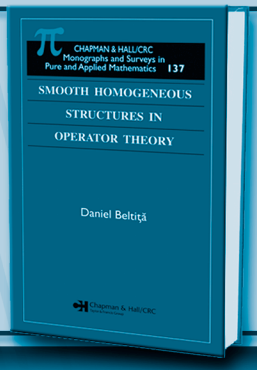
Smooth Homogeneous Structures in Operator Theory



A volume in the ***Monographs and Surveys in Pure and Applied Mathematics*** series • Series Editors: A. Jeffrey, H. Brezis, and R. Douglas

Daniel Beltiţă
Institute of Mathematics, Romanian Academy, Bucharest

Geometric approaches to traditional operator theoretic problems

Geometric ideas and techniques play an important role in operator theory and the theory of operator algebras. **Smooth Homogeneous Structures in Operator Theory** builds the background needed to understand this circle of ideas and reports on recent developments in this fruitful field of research.

Requiring only a moderate familiarity with functional analysis and general topology, the author begins with an introduction to infinite dimensional Lie theory with emphasis on the relationship between Lie groups and Lie algebras. A detailed examination of smooth homogeneous spaces follows. This study is illustrated by familiar examples from operator theory and develops methods that allow endowing such spaces with structures of complex manifolds. The final section of the book explores equivariant monotone operators and Kähler structures. It examines certain symmetry properties of abstract reproducing kernels and arrives at a very general version of the construction of restricted Grassmann manifolds from the theory of loop groups.

The author provides complete arguments for nearly every result. An extensive list of references and bibliographic notes provide a clear picture of the applicability of geometric methods in functional analysis, and the open questions presented throughout the text highlight interesting new research opportunities.

Daniel Beltiţă is a Principal Researcher at the Institute of Mathematics "Simion Stoilow" of the Romanian Academy, Bucharest, Romania.

Catalog no. C617X, November 2005, 320 pp.
ISBN: 1-58488-617-X, $89.95 / £49.99

FEATURES

- Conducts a systematic investigation of operator ideals through the techniques of Lie theory and differential. geometry
- Includes an introduction to infinite-dimensional Lie groups and infinite-dimensional complex manifolds
- Contains an extensive list of references
- Presents open problems throughout the text to stimulate further research

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