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Título: Commutative Algebras Of Toeplitz Operators On The Bergman Space

Autor: Vasilevskinikolai L.

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Sinopsis

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This book is devoted to the spectral theory of commutative C^* -algebras of Toeplitz operators on the Bergman space and its applications. For each such commutative algebra there is a unitary operator which reduces Toeplitz operators from this algebra to certain multiplication operators, thus providing their spectral type representations. This yields a powerful research tool giving direct access to the majority of the important properties of the Toeplitz operators studied herein, such as boundedness, compactness, spectral properties, invariant subspaces.

The presence and exploitation of these spectral type representations forms the core for many results presented in the book. Among other results it contains a criterion of when the algebras are commutative on each commonly considered weighted Bergman space together with their explicit descriptions; a systematic study of Toeplitz operators with unbounded symbols; a clarification of the difference between compactness of commutators and semi-commutators of Toeplitz operators; the theory of Toeplitz and related operators with symbols having more than two limit values at boundary points; and a kind of semi-classical analysis of spectral properties of Toeplitz operators.

The book is addressed to a wide audience of mathematicians, from graduate students to researchers, whose primary interests lie in complex analysis and operator theory.