报告题目：Toeplitz Operators and Representations in the vector-valued case

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报告摘要：

Hardy and Bergman spaces of holomorphic functions on multi-variable bounded symmetric domains G/K form an important topic in operator and representation theory, generalizing the classical case of the unit disk and upper half-plane. In the talk we discuss the more general case of vector-valued holomorphic functions on G/K, where the target space carries an irreducible representation of the maximal compact subgroup K of the semi-simple Lie group G. The corresponding Hilbert spaces (vector-valued weighted Bergman spaces) are fundamental for the so-called holomorphic discrete series of representations of G.

From an operator-theoretic point of view there arise a number of important and challenging problems: (i) Describe the (matrix-valued) reproducing kernel of these Bergman type spaces (ii) Describe the structure of the corresponding C*-algebra generated by matrix-valued Toeplitz operators (iii) Find the asymptotic expansion of the Berezin transform in this setting. In the talk we present the basic results in this direction and illustrate them by examples. Finally, we sketch a far-reaching extension of these ideas to include all irreducible representations of G instead of just the holomorphic discrete series.