

ESCHMEIER MEMORIAL COLLOQUIUM AND WORKSHOP – ABSTRACTS

1. THURSDAY

Speaker: Mihai Putinar

Title: Searching for spectra in Joerg's company

Abstract: Spectral decompositions beyond normal or compact linear operators were known for a long time, as technical ingredients in the study of mathematical physics problems. Only during the second half of XX-th century, they were systematically investigated from an axiomatic perspective. The landmark doctoral dissertation of Erret Bishop devoted to the subject opened a new era of notable discoveries. About the same time Ciprian Foias saw the advantage of focusing on (maximal) spectral subspaces rather than idempotents, isolating in this context the concept of decomposable operator. After all, the key feature of the emerging local spectral theory turned out to be of cohomological nature. A pioneer of the latter approach, raised at the level of module theory language, was Joseph L. Taylor.

This survey talk will outline the unifying and conceptually simpler analytic localization construct forged in the company of Joerg Eschmeier during the 1980-ies. Our analytic sheaves cohomology framework is rooted both in classical spectral theory and modern function theory of a complex variable, offering today a flexible tool for future research.

2. FRIDAY

Speaker: Sandra Pott

Title: From Matrix Weights to Bloom BMO via the Schur Complement

Abstract:

The theory of matrix Muckenhoupt weights was initiated by Nazarov, Treil, and Volberg in the late 90's and has developed rapidly since then, particularly during the last few years. At the same time, the theory of so-called Bloom BMO spaces, certain weighted BMO spaces, has been developed in various settings. In the talk, I want to show how these developments can be connected via the use of the Schur complement

and the familiar diagonalization technique for Foguel-Hankel operators. We will show how this connection, the "Bloom correspondence", can be used to prove new estimates.

Speaker: Florian Vasilescu

Title: Spectrum and Analytic Functional Calculus in Real, Quaternionic, and Cliffordian Frameworks

Abstract: We investigate the spectrum and the analytic functional calculus for quaternionic and cliffordian linear operators having as a model some elements from the spectral theory of real linear operators. We show that the construction of the analytic functional calculus for real linear operators can be refined to get a similar construction for quaternionic linear ones, more generally for cliffordian ones, in a classical manner, using a Riesz-Dunford-Gelfand type kernel.

Speaker: Isabelle Chalendar

Title: Weighted composition operators on spaces of holomorphic functions: motivation and spectral properties

Abstract: Firstly we will recall some links between the description of isometries and weighted composition operators and explain the link between universal operators and composition operators. Then we will investigate the spectral properties of such operators on the Fréchet space $Hol(\mathbb{D})$ of holomorphic functions on the unit disc \mathbb{D} , showing the importance of the Denjoy–Wolff point of the analytic symbol associated with the composition part. We then deduce some spectral properties on various Banach spaces which embeds continuously in $Hol(\mathbb{D})$.

Speaker: Harald Upmeyer

Title: K -invariant Hilbert modules on bounded symmetric domains.

Abstract: Every bounded symmetric domain of rank r , including the exceptional domains, carries natural families of invariant Hilbert modules of holomorphic functions, determined by partitions and Young diagrams of length r . We characterize these Hilbert modules and, in particular, describe the so-called eigenbundle (joint eigenspaces) explicitly in terms of polynomials on the normal space of a stratification of algebraic varieties. A description in terms of reproducing kernel functions and their normal derivatives is also given.

Speaker: Miroslav Engliš

Title: What I know thanks to Joerg Eschmeier: Operator theory and microlocal analysis

Abstract: We review connections between the Arveson-Douglas conjecture and methods from microlocal analysis, and discuss recent ramifications including e.g. weighted Bergman kernels for M-harmonic functions.

Speaker: Michael Didas

Title: A -isometries, inner functions and Toeplitz operators

Abstract: The notion of a single isometric operator T on a Hilbert space H can be generalized in various ways to commuting tuples $T = (T_1, \dots, T_n)$ of operators. In a sense, the possible multi-variable counterparts of the unit disc each provide their own notion of isometric operator tuples. The concept of A -isometries (introduced by Jörg) allows to treat them all at once. Here, A is a function algebra that - in most concrete cases - is the domain algebra of a domain D in \mathbb{C}^n (which takes the place of the unit disc \mathbb{D} in \mathbb{C}).

With each A -isometry $T \in B(H)^n$, one can associate T -Toeplitz operators in such a way that the classical Hardy-space Toeplitz operators are obtained when T is the multiplication tuple M_z on $H^2(D)$. Provided that there are sufficiently many inner functions on D , one can transfer surprisingly large parts of the classical theory of Toeplitz operators over the Hardy space of the unit disc to this general situation.

In this talk, I will mainly focus on the basic ideas about the close relationship between inner functions and T -Toeplitz operators. As an example of what can be obtained by transferring classical theorems from the unit-disc case in this way, I will present some results from earlier joint work with Jörg, Kevin Everard, and Dominik Schillo.

Speaker: Kenneth R. Davidson

Title: Noncommutative Choquet theory

Abstract: I will explain some of my work with Matt Kennedy on a non commutative version of Choquet's theorem. I will mention a few recent applications as well.