Abstracts

Complex symmetric composition operators on weighted Hardy spaces
Maria Tjani, *University of Arkansas, Fayetteville, AR, USA*
`mtjani@uak.edu`

A bounded linear operator T on a complex Hilbert space $\mathcal{H}$ is called complex symmetric if there exists an isometric and conjugate-linear involution C of $\mathcal{H}$ such that $T = CT^*C$. Many well known classes of operators such as normal operators are complex symmetric. Given $\mathcal{H}$ a Hilbert space of functions and a map $\varphi \in \mathcal{H}$, the composition operator C_φ is defined by

$$C_\varphi f = f \circ \varphi$$

for all functions $f \in \mathcal{H}$. We study the complex symmetry of C_φ, induced on the weighted Hardy spaces $H^2(\beta)$ by analytic self-maps φ of the open unit disk $\mathbb{D}$. This is joint work with Sivaram Narayan and Daniel Sievewright.

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Extensions of Bernstein's Lethargy Theorem
Asunam Askoy, *Claremont McKenna College, Claremont, CA, USA*
`aaksoy@cmc.edu`

In this talk, we examine the aptly-named "Lethargy Theorem" of Bernstein and survey its recent extensions. We show that one of these extensions shrinks the interval for best approximation by half while the other gives a surprising connection to the space of bounded linear operators between two Banach spaces.

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Orthogonally additive operators on Banach lattices
William Feldman, *University of Arkansas, Fayetteville, AR, USA*
`wfeldman@uak.edu`

Operators that fail to be linear are quite common in analysis. For the case of a functional, the operator $Tf = \int (U(x, f(x))f(x)d\mu$ is a type of Urysohn operator. Expressed in this manner, though not necessarily linear, it is orthogonally additive. In a number of applications, the analysis of orthogonally additive operators leads to factorizations involving a linear factor. For an operator T in a broad class of orthogonally additive operators on Banach lattices, it is established that T is a linear operator composed with a generalized (non-linear) orthomorphism. The orthomorphism is realized in a point-wise or locally determined manner when the Banach lattice E is identified with a representation as continuous functions.

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The adjoint of a composition operator on spaces of analytic functions
Brittney Miller, *Coe College, Coe College, Cedar Rapids, IA, USA*
`bmiller@coe.edu`

Let φ be a rational map from $\mathbb{D}$ to itself that is analytic on $\mathbb{D}$. The composition operator C_φ, with symbol φ, is defined by $C_\varphi f = f \circ \varphi$ for f in a Hilbert space of analytic functions on $\mathbb{D}$. In 2014, Goshabulaghi and Vaezi computed an explicit formula for the adjoint of a rationally induced composition operator on the Bergman space. Their proof uses Bourdon and Shapiro's formula from 2008 for the adjoint of a rationally induced composition operator on the Hardy space, and properties about the map $T : A^2 \to H^2$ defined by $T\left(\sum_{n=0}^{\infty} a_n z^n\right) = \sum_{n=0}^{\infty} a_n (n+1)^{-1/2} z^n$. In this talk, we will explore these adjoint formulas for composition operators on the Hardy and Bergman spaces.

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Numerical index of vector - valued function spaces

Abdullah Bin Abu Baker, *Indian Institute of Information Technology, Allahabad, India*
abdullahmath@gmail.com

The numerical index of a Banach space is a constant relating the norm and the numerical range of operators on the space. This concept was first introduced by G. Lumer in 1968. In this talk, we shall discuss the relation between the numerical index of three types of vector valued continuous function spaces with the numerical index of the respective range spaces. This is a joint work with Fernanda Botelho.

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A technique for studying nonlinear functionals

Jessica Stovall, *University of North Alabama, Florence, AL, USA*
jstovall@una.edu

Any Dedekind complete Banach lattice with a quasi-interior point is lattice isomorphic to a space of continuous, extended real-valued functions defined on a compact Hausdorff space. In the case of an orthogonally additive, continuous, monotonic, and sub-homogeneous nonlinear functional, the concept of integration is no longer valid. However, a measure related to the nonlinear functional can be constructed. From this measure, an associated linear operator can be created. This talk discusses this process and demonstrates how to use associated linear operators to study nonlinear functionals.

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On intermediate C^*-sub-algebras of crossed products of C^*-simple group actions

Tattwamasi Amrutam, *University of Houston, Houston, TX, USA*

A unital Γ-C^*-algebra is called Γ-simple if it doesn't admit any Γ-invariant two sided closed ideal. For a Γ-simple, unital Γ-C^*-algebra, $\mathcal{A}$, it is well known that $\mathcal{A} \rtimes_{\alpha,r} \Gamma$ is simple, when Γ is a C^*-simple group. Using the new notion of stationary C^*-dynamical systems, introduced by Yair Hartman and Mehrdad Kalantar, we show that, for a minimal action of a -simple group on a compact Hausdorff space, every unital Γ-C^*-subalgebra of the reduced crossed product $C(X) \rtimes_r \Gamma$ is Γ-simple. This allows us to conclude that, every intermediate C^* -algebra $\mathcal{B}$ of the form $C^*_\lambda(\Gamma) \subseteq C(X) \rtimes_r \Gamma$, is simple. Moreover, we show that, for a large class of actions of C^*-simple groups $\Gamma \curvearrowright \mathcal{A}$, including non-faithful action of any hyperbolic group with trivial amenable radical, every intermediate C^*-algebra $\mathcal{B}$, $C^*_\lambda(\Gamma) \subseteq \mathcal{B} \subseteq \mathcal{A} \rtimes_r \Gamma$, is of the form $\mathcal{A}_1 \rtimes_r \Gamma$, $\mathcal{A}_1$ is a unital Γ-C^*-subalgebra of $\mathcal{A}$. A part of this is a joint work with Mehrdad Kalantar.

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Quotient operators on tensor product spaces

Monika, *University of Memphis, Memphis, TN, USA*
myadav@memphis.edu

Let X, Y, Z be Banach spaces. An operator $Q : Z \to Y$ is a quotient operator if Q is surjective and $\|y\| = \inf\{\|z\| : z \in Z, Q(z) = y\}$ for every $y \in Y$. Also, let I be an identity operator on X. In this talk I will present conditions under which the maps $I \otimes Q$ and $Q \otimes I$ are again quotient operators on the respective tensor product spaces. Also some related results and recent developments will be presented. This is a joint work with T.S.S.R.K. Rao.

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Hermitian projections on some operator spaces

Priyadarshi Dey, *University of Memphis, Memphis, TN, USA*
pdey@memphis.edu

We say that a projection P is a Hermitian projection if e^{itP} is a surjective isometry for every $t \in \mathbb{R}$. One of the main problems is to give an explicit description of the Hermitian projections on different Banach spaces. It has been well studied for several Banach Spaces and also for algebras. In this talk, the form of such projections will be presented for many classical Banach spaces. Also, in particular, I will talk about the form of such projections on the space $\mathcal{B}(\mathcal{H}, \mathcal{K})$, with $\mathcal{H}$ and $\mathcal{K}$ representing Hilbert spaces. This is joint work with Fernanda Botelho & Dijana Ilišević.