



2021 南开大学 Banach 空间与算子理论研讨会

本次研讨会得到中国科协“海峡两岸青年数学家常态化论坛”项目的支持

日期	时间	报告人	题目	主持人
28 日 下午	腾讯会议/voov meeting: 838 624 225			
	14:30-15:10	王茂发	Topological structure of the space of composition operators on a Hilbert space of Dirichlet series	程立新
	15:10-15:50	马涛	Vector-valued q -variational inequalities for averaging operators and Hilbert transform	
	15:50-16:30	吴森林	Divide bounded sets into sets having smaller diameters	董云柏
	16:30-17:10	陈伟	Weighted estimates for positive operators and Doob maximal operators	

日期	时间	报告人	题目	主持人
29日 上午	腾讯会议/voov meeting: 445 347 078			
	9:00-9:40	石瑞	$L(\mathbb{F}_2)$ 中的可约算子	吉国兴
	9:40-10:20	纪奎	On the unitarily equivalence of Cowen-Douglas operators	
	10:20-11:00	王凯	Holomorphic isometries from the unit ball into symmetric domains	王利广
	11:00-11:40	朱森	Ideal structure of Hermitian type Cartan factors	
29日 下午	腾讯会议/voov meeting: 199 155 745			
	14:30-15:10	房军生	Sums of projections in semifinite factors	刘锐
	15:10-15:50	付本银	The K -amenability and higher index map for metric spaces with proper group actions	
	15:50-16:30	史维娟	Ortho-isomorphisms on Grassmann spaces in a semifinite factor	

报告摘要

(1) 姓名: 陈伟

单位: 扬州大学

报告题目: Weighted estimates for positive operators and Doob maximal operators

摘要: We characterize strong type and weak type inequalities with two weights for positive operators on filtered measure spaces. These estimates are probabilistic analogues of two-weight inequalities for positive operators associated to the dyadic cubes in \mathbb{R}^n due to Lacey, Sawyer and Uriarte-Tuero. Several mixed bounds for the Doob maximal operator on filtered measure spaces are also obtained. In fact, Hytönen-Pérez type and Lerner-Moen type norm estimates for Doob maximal operator are established. We also study multilinear weighted inequalities. Our approaches are mainly based on the construction of principal sets.

(2) 姓名: 房军生

单位: 河北师范大学

报告题目: Sums of projections in semifinite factors

摘要: Which positive operators in a factor von Neumann algebra can be written as sums of projections? This question is studied by Victor Kaftal, Ping Wong Ng, and Shuang Zhang. They obtained beautiful results on the question. In this talk we report some new progress on the question. This is joint work with Xinyan Cao and Zhaolin Yao.

(3) 姓名: 付本银

单位: 上海立信会计金融学院

报告题目: The K-amenability and higher index map for metric spaces with proper group actions

摘要: I will talk about the K-amenability and the equivariant higher index map for the metric space with proper and isometrical group actions. We prove that for a countable discrete amenable group Γ and a uniformly discrete metric space X with bounded geometry, assume that Γ acts on X properly and isometrically with the Γ -orbits equicoarsely equivalent to each other, if the quotient space X/Γ is coarsely embeddable into a Hilbert space, then the Γ -space X is K-amenable, and the equivariant higher index map is an isomorphism. This is a joint work with Deng Jintao and Wang Qin.

(4) 姓名: 纪奎

单位: 河北师范大学

报告题目: On the unitarily equivalence of Cowen-Douglas operators

摘要: In this talk, we will recall some results on the unitarily equivalence of Cowen-Douglas operators, with a particular focus unitarily equivalence of Cowen-Douglas operators in terms of the connections of related Hermitian Holomorphic vector bundles.

(5) 姓名: 马涛

单位: 武汉大学

报告题目: Vector-valued q -variational inequalities for averaging operators and Hilbert transform

摘要: Recently, the authors have established L_p -boundedness of vector-valued q -variational inequalities for averaging operators which take values in the Banach space satisfying the martingale cotype q property in Hong and Ma (Math Z 286(1 - 2):89 - 120, 2017). In this paper, we

prove that the martingale cotype q property is also necessary for the vector valued q -variational inequalities, which was a question left open in the previous paper. Moreover, we also prove that the UMD property and the martingale cotype q property can be characterized in terms of vector valued q -variational inequalities for the Hilbert transform.

(6) 姓名: 石瑞

单位: 大连理工大学

报告题目: $L(\mathbb{F}_2)$ 中的可约算子

摘要: 在报告中, 我们介绍一个例子. 在 $L(\mathbb{F}_2)$ 中, 可约算子按范数拓扑不是稠密的.

(7) 姓名: 史维娟

单位: 陕西师范大学

报告题目: Ortho-isomorphisms on Grassmann spaces in a semifinite factor

摘要: Let M be a semifinite factor with a faithful normal semifinite tracial weight τ , and P the set of all projections in M . Denote by P_c the Grassmann space of all projections in P with trace c , where c is a positive real number. A map $\psi : P_c \rightarrow P_c$ is called an ortho-isomorphism if ψ is a bijection of P_c onto P_c satisfying, for all $p, q \in P_c$, $p \perp q$ if and only if $\psi(p) \perp \psi(q)$. In this report, we give a complete characterization of ortho-isomorphisms between two Grassmann spaces P_c in a semifinite factor. We show that an ortho-isomorphism $\psi : P_c \rightarrow P_c$ can be extended to a Jordan $*$ -isomorphism J of M onto M .

(8) 姓名: 王凯

单位: 复旦大学

报告题目: Holomorphic isometries from the unit ball into symmetric domains

摘要: In this talk, we will introduce some progress on holomorphic isometries over symmetric domains. We will construct isometric holomorphic embeddings of the unit ball into higher rank symmetric domains, and prove uniqueness results for domains of rank 2. This is a joint work with Prof. H. Upmeyer and Prof. Genkai Zhang.

(9) 姓名: 王茂发

单位: 武汉大学

报告题目: Topological structure of the space of composition operators on a Hilbert space of Dirichlet series

摘要: The aim of this talk is to study when two composition operators on the Hilbert space of Dirichlet series with square summable coefficient belong to the same component or when their difference is compact. As a corollary we show that if a linear combination of composition operators with polynomial symbols of degree at most 2 is compact, then each composition operator is compact. This is a joint work with Professors F Bayart and X Yao.

(10) 姓名: 吴森林

单位: 中北大学

报告题目: Divide bounded sets into sets having smaller diameters

摘要: For each positive integer m and each real finite dimensional Banach space X , we set $\beta(X, m)$ to be the infimum of $\delta \in (0, 1]$ such that each set $A \subset X$ having diameter 1 can be represented as the union of m subsets of A whose diameters are at most δ . Elementary properties of $\beta(X, m)$, including its stability with respect to X in the

sense of Banach-Mazur metric, are presented. Two methods for estimating $\beta(X, m)$ are introduced. The first one estimates $\beta(X, m)$ using the knowledge of $\beta(Y, m)$, where Y is a Banach space sufficiently close to X . The second estimation uses the information about $\beta_X(K, m)$, the infimum of $\delta \in (0, 1]$ such that $K \subset X$ is the union of m subsets having diameters not greater than δ times the diameter of K , for certain classes of convex bodies K in X . In particular, we show that $\beta(l_p^3, 8) \leq 0.925$ holds for each $p \in [1, +\infty]$ by applying the first method, and we proved that $\beta(X, 8) < 1$ whenever X is a three-dimensional Banach space satisfying $\beta_X(B_X, 8) < \frac{221}{328}$, where B_X is the unit ball of X , by applying the second method. These results and methods are closely related to the extension of Borsuk's problem in finite dimensional Banach spaces and to C. Zong's computer program for Borsuk's conjecture.

(11) 姓名: 朱森

单位: 吉林大学

报告题目: Ideal structure of Hermitian type Cartan factors

摘要: For a conjugation C on a separable, complex Hilbert space \mathcal{H} , the set \mathcal{S}_C of C -symmetric operators on \mathcal{H} forms a weakly closed, selfadjoint, Jordan operator algebra, which has been studied under the name of Hermitian type Cartan factor. In this talk we discuss the ideal structure of \mathcal{S}_C .

We determine the Jordan ideals of \mathcal{S}_C and their dual spaces. As applications, we classify Jordan automorphisms of \mathcal{S}_C and determine the spectra of Jordan multiplication operators on \mathcal{S}_C as well as their different parts. On the other hand, we prove that the set of principal inner ideals in \mathcal{S}_C forms a lattice and is order isomorphic to the lattice of all operator ranges in \mathcal{H} . Also we give concrete descriptions of weak*-closed inner ideals in \mathcal{S}_C and show that they constitute a lattice

which is order isomorphic to the lattice of all subspaces of \mathcal{H} .