Proposal for a minisymposium within the conference CSASC 2011

Title: Operator theory

Description: The minisymposium is devoted to the theory of linear mappings between vector spaces. New results from linear algebra as well from the theory of bounded linear operators on Banach spaces will be presented.

Organizers: Vladimir Müller (Prague), Janko Bračič (Ljubljana)

Tentative list of speakers:

1. Calin Ambrozie (Czech Republic)
2. Nadia Boudi (Morocco)
3. Janko Bračič (Slovenia)
4. Bojan Kuzma (Slovenia)
5. Vladimir Müller (Czech Republic)
6. Peter Šemrl (Slovenia)
7. Michal Zajac (Slovakia)

Abstracts

Calin Ambrozie: On certain multidimensional integrals, 30 minutes

Abstract: We discuss various ways of computing certain integrals with application to problems of moments in several variables.

Nadia Boudi: On locally linearly dependent operators, 30 minutes

Abstract: Locally linearly dependent operators arise in many problems in Operator theory. In this talk, we will say a little about applications of these operators, and study their connection with quantum entanglement.

Janko Bračič: Reflexive and hyperreflexive sets of operators, 30 minutes

Abstract: Reflexivity and hyperreflexivity of spaces and algebras of operators have been studied by many mathematicians interested in bounded linear operators on Hilbert and Banach spaces.

However, these two notions can be considered also for sets of operators which are not necessary linear spaces or algebras. We will present a few related results and discuss several open questions.

Bojan Kuzma: On maximal distances in commuting graph, 30 minutes

Abstract: A commuting graph of an algebra is a simple undirected, loopless graph whose vertices are noncentral elements of the algebra and where two distinct vertices are connected if the corresponding elements commute. It is known that a commuting graph of a matrix algebra is connected, provided that the underlying field is algebraically closed. Moreover, its diameter (i.e. the maximal distance between two vertices) if four. We will present some recent results which classify matrices that, in a commuting graph, are at maximal distance to some other matrix.

With the help of commuting graph we can also determine which matrices are of rank-one and which are diagonalizable. Since matrices with the same commutant are indistinguishable in commuting graph, our results hold only up to equivalence relation, induced by the commutant.

This is a joint work with G. Dolinar and P. Oblak.

Vladimir Müller: Mappings preserving Browder, semi-Browder and similar classes of operators, 45 minutes

Abstract: Let H be a separable infinite-dimensional Hilbert space and $\Phi : B(H) \to B(H)$ a continuous surjective additive mapping. We give a characterization of such mappings preserving the class of Browder operators in both directions. Similar characterizations will be given also for mappings preserving upper (lower) semi-Browder operators, operators with finite ascent (descent) and Drazin invertible operators.

This is a joint work with M. Mbekhta and M. Oudghiri

Peter Šemrl: Adjacency preserving maps, 45 minutes

Abstract: We will present some recent results on adjacency preserving maps on hermitian matrices, self-adjoint operators, and Hilbert space effects. These results can be applied to study symmetries in mathematical foundations of quantum mechanics.

Michal Zajac: Hyperreflexivity of linear spaces of operators, 30 minutes

Abstract: A review of results on reflexivity and hyperreflexivity of some spaces of bounded linear operators will be given in the lecture. In particular, we shall consider reflexivity and hyperreflexivity of intertwiners and commutants of Jordan models. A review of known examples of nonhyperreflexive reflexive spaces will be also given.