

Abstract:

Existence of projections of special type can be a determining factor in the structure theory of C^ -algebras and von Neumann algebras. Type decomposition is a part of the theory which relies exclusively on this fact.*

In this workshop, we begin with the general theory of Banach algebras and the structure theory of C^ -algebras. We then give a review of basics and type decomposition in the algebraic setting. Recall that a unital C^* -algebra has real rank zero if the set of self-adjoint invertible elements is norm dense in the set of self-adjoint elements.*

We discuss some reformulations of this concept and some other related classes of C^ -algebras which contain or contained in the class of C^* -algebras of real rank zero. Particular attention will be paid to the class of C^* -algebras with the ideal property; that is, C^* -algebras in which every closed ideal is generated by its projections. In the commutative case, topological characterizations of these notions will also be discussed. Then, we review some recent efforts which are made to extend these concepts to arbitrary Banach algebras.*

[1] Blackadar, B., *Operator Algebras, Theory of C^* -algebras and von Neumann Algebras*, Springer-Verlag, Berlin, 2006.

[2] Murphy, G. J., *C^* -algebras and Operator Theory*, Academic Press, Boston, 1990.

Schedule of talks:

Sunday: August 23, 2015

Registration: 8:00-8:30

Welcoming Remark: 8:30-9:00

Lecture 1 (F. Bahrami): 9:00-10:30

The general theory of Banach algebras and $*$ -algebras

Break: 10:30-11:00

Lecture 2 (F. Bahrami): 11:00-12:30

The theory of C^* -algebras and von Neumann algebras

Prayer and Lunch: 13:00-14:30

Lecture 3 (G. H. Esslamzadeh): 14:30-16:00

Basics and type decomposition in the algebraic setting

Break: 16:00-16:30

Lecture 4 (G. H. Esslamzadeh): 16:30-18

Topologies on the C^* -algebras of linear operators

Break: 18:00-18:30

Lecture 5 (G. H. Esslamzadeh): 18:30-19:30

C^* -algebras of real rank zero and related classes

Monday (August 24, 2015):

Lecture 6 (G. H. Esslamzadeh): 9:00-10:30

The class of C^* -algebras with the ideal property

Break: 10:30-11:00

Lecture 7 (G. H. Esslamzadeh): 11:00-12:30

Generalizations in the Banach algebra context