Department of Mathematics
The University of Texas at San Antonio

2011 Seminar Series

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Friday, March 11, 2011

Time: 3:00 - 4:00 PM

Room: BSE 2.102

Leavitt path algebras and graph C*-algebras: at the crossroads of Algebra and Functional Analysis

Abstract: In the past 15 years Functional Analysts have considered a method for constructing C*-algebras from directed graphs. These graph C*-algebras include many previously considered classes of C*-algebras, and provide a unified framework in which to consider many examples. Furthermore, numerous properties of the graph C*-algebra can be translated into properties of the graph, allowing for a very satisfying theory in which C*-algebraic questions can be reformulated as graph questions. In the past 5 years Algebraists have used similar methods to construct a K-algebra from a directed graph. These K-algebras are called Leavitt path algebras, and they generalize the Leavitt algebras (which are fundamental examples of algebras without the Invariant Basis Number property). To many researchers' surprise, it has been found that when properties of a graph correspond to properties of the associated C*-algebra, these same graph properties correspond to the algebraic properties of the associated Leavitt path algebra. What is even more astonishing is that neither the graph C*-algebra results nor the Leavitt path algebra results are obviously logical consequences of the other. Often different methods are used in the proofs, and moreover, neither set of results can easily be seen to imply the other. This has left many researchers wondering exactly what the relationship is between the Leavitt path algebras and the graph C*-algebras. In this talk I will describe the many similarities (and a few of the differences) between these two classes.

A reception will follow the talk and will be held in BSE 2.102