IDEALS IN k-GRAPH ALGEBRAS

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Abstract
Higher-rank graph C*-algebras were introduced in 2000 by Kumjian and Pask. They are generalizations of the Cuntz-Krieger algebras and, more generally, directed graph algebras. Many of the results concerning higher-rank graphs have come by finding higher-rank analogs of results from the theory of directed graph algebras.

We will talk about the ideal structure of higher-rank graph algebras by following a strategy similar to one established by an Huef and Raeburn for Cuntz-Krieger algebras and by Bates, Hong, Raeburn, and Szymański for directed graph algebras. We will first discuss an important collection of ideals that are invariant under an action known as the gauge action. It has been established by Raeburn, Sims and Yeend that this collection is in correspondence with the family of saturated and hereditary sets — certain subsets of vertices associated with open sets in the Kumjian-Pask groupoid of a higher-rank graph. The question of which gauge invariant ideals are primitive is answered by examining the maximal tails, which are related to orbit closures in the associated groupoid. In order to describe non gauge invariant ideals, we will see that a large class (conjecturally all) of k-graph algebras is Morita equivalent to $C(T^n) \otimes C^*(\Omega)$, where $\Omega$ is a lower rank graph with no local periodicity.

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