

C^* -algebras associated to directed graphs

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Abstract

This thesis contains material relating to two separate subjects. The first section determines when the C^* -algebra affiliated to a directed graph has continuous trace. We use groupoid methods and the focus is on producing conditions on a graph that specify behavior at the path groupoid level. The results generalize to give partial information on the class of k -graphs yielding continuous-trace C^* -algebras. Along the way we generalize a result on row-finite graphs yielding C^* -algebras with Hausdorff spectrum, first to the level of arbitrary graphs and then partially to the level of k -graphs. The second section concerns graph-like objects yielding stable C^* -algebras. We do not use the groupoid methods of the first half and instead focus on direct manipulation of Cuntz-Krieger families of partial isometries. The main construction yields a trace on a graph in the event that a certain projection comparison fails to hold in the C^* -algebra. The second section also contains a corrected proof of a result in the literature determining when the C^* -algebra affiliated to a directed graph is stable. This result generalizes from graphs to some well-behaved higher-rank graphs.