

THE CLASSIFICATION OF UNITAL GRAPH C^* -ALGEBRAS

Søren Eilers

University of Copenhagen

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The ambition to classify graph C^* -algebras and their precursors, the Cuntz-Krieger algebras goes back to the inception of the field. In fact, as early as 1981, Enomoto, Fujii and Watatani showed by ad hoc methods how to classify all the simple Cuntz-Krieger algebras that may be described by a 3×3 -matrix, predating by more than a decade the classification result of Rørdam covering all simple Cuntz-Krieger algebras.

With the classification problem resolved for all simple graph C^* -algebras around the turn of the millenium due to the realization that any such C^* -algebra is either AF or purely infinite, the quest for classification of graph C^* -algebras moved into the realm of non-simple classification, where it has been a key problem ever since. The endeavor has evolved in parallel with the gradual realization of what invariants may prove to be complete in the case when the number of ideals is finite and the C^* -algebras in question are not stably finite. In this sense, the fundamental results obtained on the classification of certain classes of graph C^* -algebras are, one may hope, playing a role parallel to the one played by Rrdam's result as a catalyst for the Kirchberg-Phillips classification.

I will present a complete classification theorem for all unital graph C^* -algebras, obtained in joint work with Restorff, Ruiz and Sørensen. Emphasizing the discrete nature of our proof, I will also discuss the difficulties involved in an attack on the general (non-unital) case.