

# The uncanny resemblance between Leavitt path algebras and graph $C^*$ -algebras

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In his fundamental paper “Simple  $C^*$ -algebras generated by isometries” (Comm. Math. Physics 57(2) 1977), Cuntz described a class of  $C^*$ -algebras, the now-so-called *Cuntz algebras*  $\mathcal{O}_n$ . These algebras were generalized a few years later to the *Cuntz-Krieger algebras*  $\mathcal{O}_A$ , and subsequently in the early 2000s to the *graph  $C^*$ -algebras*  $C^*(E)$ .

In this talk we will describe some of the structural results for the algebras  $C^*(E)$ . We then compare and contrast these results with analogous results for the Leavitt path algebras  $L_C(E)$  having coefficients in the complex numbers (introduced in two previous UCCS Colloquia; a recap of these will be given). While the similarities between the results for  $C^*(E)$  and for  $L_C(E)$  in terms of the graph  $E$  are more than striking, there is currently no known way of passing results from the analytic side to the algebraic, nor vice-versa. We will present some first attempts at trying to understand this phenomenon. (Joint work with Mark Tomforde, U. Houston.)