



The ARCS Seminar

Shift equivalences through the lens of Cuntz-Krieger algebras

Adam Dor-On

University of Münster, Germany

Abstract: In a seminal 1973 paper, Williams recast conjugacy and eventual conjugacy for subshifts of finite type (SFTs) purely in terms of equivalence relations between adjacency matrices, the first called strong shift equivalence (SSE) and the second called shift equivalence (SE), respectively. Williams expected these two notions to be the same, but after around 20 years the last hope for a positive answer, even under the most restrictive conditions, was extinguished by Kim and Roush.

In this talk we will introduce and orient intermediary notions between SSE and SE that naturally arise from studying C^* -algebras associated with directed graphs. Such C^* -algebras were first introduced by Cuntz and Krieger in tandem with early attacks on Williams problem, and manifest several natural properties of SFTs through their classification up to various kinds of isomorphisms.

An important conjecture in this context is that equivariant stable isomorphisms between Cuntz-Krieger algebras coincides with isomorphism of associated dimension triples, when the adjacency matrices are with non-zero rows and non-zero columns. A solution has been sought after by many, and although substantial progress has been made, a proof is still missing in general. Based on the celebrated counterexamples of Kim and Roush, we show that an a priori intermediary notion between SSE and SE obstructs certain algebraic methods of proof for this conjecture.

This is based on joint work with Toke Carlsen and Søren Eilers.

Time and Place: Tuesday, March 8 from 12:30–1:30PM (Mountain Time Zone) online (contact Gene Abrams abrams@math.uccs.edu for login link.



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