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On the classification of sub Cuntz-Krieger algebras

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Abstract: The Cuntz-Krieger algebras, $\mathcal{O}_A$, are C*-algebras generated by n partial isometries, subject to certain relations codified by a $0-1$ matrix A, with $n = \dim A$.

Let $\mathcal{M}(I)$ be a certain class of Markov interval maps with domain contained in the interval I, whose associated transition matrix A_f, necessarily primitive, codifies the possible transitions between the Markov states.

We consider the problem of deciding when a restriction $g := f|_J$ of a map $f \in \mathcal{M}(I)$ to a subset $J \subset I$ is in the class $\mathcal{M}([J])$, where $[J]$ is the minimal closed interval containing J. We establish natural conditions on $J \subset I$ so that $g = f|_J$ is a Markov map. Then we tackle the central problem of deciding when the matrix A_g is primitive in this framework. We are able to enumerate the sets J, satisfying the referred conditions, through a systematic process of elimination of the rows/columns of the state splitting of A_f associated to the so called removable states, which ensures the primitivity of the matrices A_g.

Using certain representations arising from the orbits of f and g, we obtain a classification scheme for the sub algebras of $\mathcal{O}_A$, with A primitive, which are also Cuntz-Krieger algebras.

joint work with Paulo Pinto, Nuno Martins (IST)

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