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Conductance and noncommutative dynamical systems. (English summary)


The authors generalise the notion of conductance to Markov subshifts, and their noncommutative analogue: the Cuntz-Krieger algebra [J. Cuntz and W. Krieger, Invent. Math. 56 (1980), no. 3, 251–268; MR0561974 (82f:46073a)]. The connection is through the notion of conductance from graph theory: there is a canonical way to associate a finite graph to a Cuntz-Krieger algebra, namely by considering the matrix $A$ to be the edge-adjacency matrix of a directed graph. The authors simultaneously associate graph structures to the spaces of paths in this graph of length $k$ for each $k \geq 0$. In the limit they obtain an infinite graph which codifies the structure of the path space. They introduce techniques for studying the conductance (or isoperimetric number) of this graph using a realization of the associated Cuntz-Krieger algebra on Fock space.

Reviewed by Teresa Gay Bates

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