

PROBLEMS ON MARKOV CHAINS ARISING FROM OPERATOR ALGEBRAS.

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The theory of Markov chains has applications in diverse areas of Mathematics and Physics such as group theory, dynamical systems, electrical networks and information theory. Connections with operator algebras however, seem to be mostly in the non-commutative scenario of quantum information.

In this talk we will show how questions about operator algebras of stochastic matrices studied by Markiewicz and myself motivate new problems in Markov chain theory. We will show how the study of harmonic functions allows for better classification results of our algebras, and how non-commutative peaking in the sense of Arveson can be completely characterized in terms of the stochastic matrix.

*This is based on joint work with Xinxin Chen, Langwen Hui, Christopher Linden and Yifan Zhang, conducted as part of an undergraduate research project in Illinois Geometry Lab at UIUC.

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