Ghost measures and the finiteness conjecture for matrices

Abstract:

In 1995, Lagarias and Wang asked whether, given a finite set S of real matrices, there is always a finite product of matrices from S which realises the joint spectral radius of S. The general conjecture has been shown to be false for real matrices, but it remains open for matrices with rational/integer entries. Regular sequences, which are sequences arising from a finite set a matrices, are intimately related to this question. In this talk, we will discuss how to build probability measures on [0,1) from regular sequences, and show that for a specific class of matrices, the finiteness property is equivalent to spectral properties of the derived measures. This is based on joint work with Michael Coons, James Evans, and Philipp Gohlke.