

## Midwest Dynamical Systems

### *Lee-Yang zeros and rational dynamics in two variables*

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**Abstract:** In a classical work, Yang and Lee proved that zeros of certain polynomials (partition functions of Ising models) always lie on the unit circle. Distribution of these zeros control phase transitions in the model. We study this distribution for a special “Migdal-Kadanoff hierarchical lattice”. In this case, it can be described in terms of the dynamics of an explicit rational function in two variables. More specifically, we prove that the renormalization operator is partially hyperbolic and has a unique central foliation. The limiting distribution of Lee-Yang zeros is described by a holonomy invariant measure on this foliation. I will explain both of the above (omitting some details) and describe further questions motivated by our work. This is a joint work with Pavel Bleher and Mikhail Lyubich.

Sunday, November 8 at 9:00 AM in SEO 636