

Title: An introduction to cluster swapping

Abstract: When are two uniform Gibbs measures on a given SFT the same? A beautiful condition comes from Van Den Berg (1994) which looks at independent samples from the measures and checks whether they differ only on finite clusters. Suppose that we know that there are two distinct ergodic Gibbs measures. Then it follows that independent samples would differ on infinite clusters. Can one “swap” between these clusters to build other ergodic Gibbs measures? Building on this idea, Scott Sheffield (2003) introduced “cluster swapping” to study certain Gibbs measures leading up to a large deviations principle for various statistical physics models. In this talk we will see how this tool can be used in relatively simple settings leading up to (time permitting) recent work by me, Scott Sheffield and Catherine Wolfram on the 3D dimer model.