Speaker: Su Gao

Title: The graph homomorphism problem for the Bernoulli shift on $\mathbb{Z}^2$

Abstract: Let F($2^{\mathbb{Z}^2}$) be the Cayley graph on the free part of the Bernoulli shift on $2^{\mathbb{Z}^2}$. The graph homomorphism problem for F($2^{\mathbb{Z}^2}$) asks for which finite graphs ΓΓ there exists a continuous or Borel graph homomorphism from F($2^{\mathbb{Z}^2}$) to Γ. In this talk we report some results on the continuous version of the graph homomorphism problem. We first demonstrate a theorem known as the Twelve Tiles Theorem that completely characterizes the positive answers to the continuous graph homomorphism problem. Then we show that the set of (codes for) all finite graphs Γ such that there exist continuous graph homomorphisms from F($2^{\mathbb{Z}^2}$) to Γ is a Σ^0_1-complete set. This is joint with Steve Jackson, Ed Krohne, and Brandon Seward.