Speaker: Ben Hayes

Title: Independence tuples and Deninger's problem.

Abstract: In 2009, Deninger asked the following question: If G is a countable, discrete group and A is an n by n-matrix over the integral group ring and A is invertible in $M_n(l^1(G))$, is the Fuglede-Kadison determinant of A bigger than 1? Using our previously established connection between Fuglede-Kadison determinants and sofic entropy, we show that Deninger's question is true if G is sofic and we can in fact allow A to be invertible in $M_n(L(G))$ where $L(G)$ is the group von Neumann algebra. We also use our techniques to show that if G is a sofic group and A is an n by n-matrix over the integral group ring and A is invertible in $M_n(L(G))$ then the action of G on the Pontryagin dual of $(Z(G)^n/Z(G)^nA)$ has completely positive entropy. This gives us more examples of the "Bernoulli-like" behavior such actions have.