The boundary of hyperbolic free by cyclic groups

Yael Algom-Kfir

Given an automorphism ϕ of the free group F_n consider the HNN extension $G = F_n \rtimes_\phi \mathcal{Z}$. We compare two cases:

1. ϕ is induced by a pseudo-Anosov map on a surface with boundary and of non-positive Euler characteristic. In this case G is a CAT(0) group with isolated flats and its (unique by Hruska) CAT(0)-boundary is a Sierpinski Carpet (Ruane).

2. ϕ is atoroidal and fully irreducible. Then by a theorem of Brinkmann G is hyperbolic. If ϕ is fully irreducible then Its boundary is homeomorphic to the Menger curve (M. Kapovich and Kleiner). We prove that if ϕ is atoroidal then its boundary contains a non-planar set. Our proof highlights the differences between the two cases above. This is joint work with A. Hilion and E. Stark