

# Orbit closures of unipotent flows for hyperbolic manifolds with Fuchsian Ends

Minju Lee (Joint work with Hee Oh)

Yale University

*minju.lee@yale.edu*

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# Ergodicity

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- Special cases were proved earlier by Margulis, Dani-Margulis, Shah.

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$M$  is called **convex cocompact**, if  $\text{core}(M)$  is compact.

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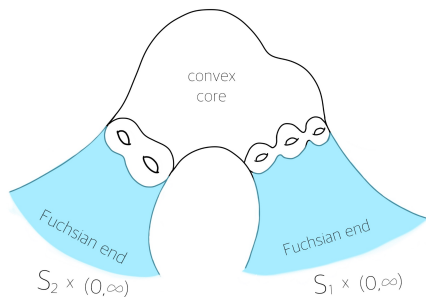
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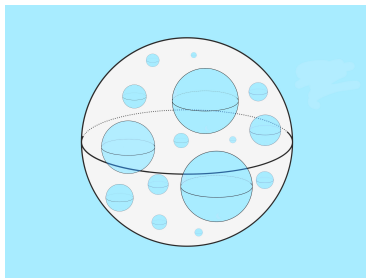
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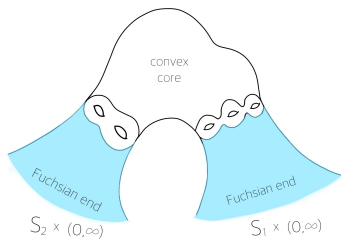
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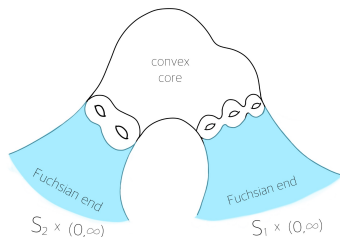
- $d = 3$  (McMullen-Mohammadi-Oh)



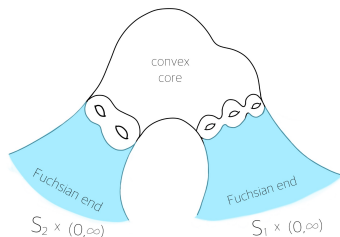
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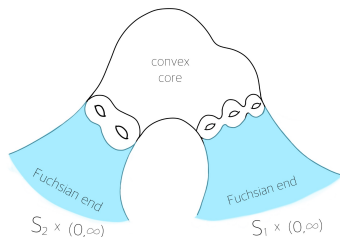


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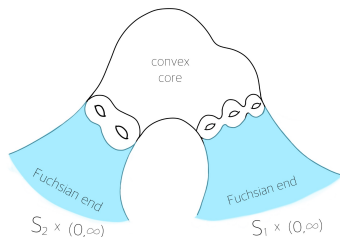
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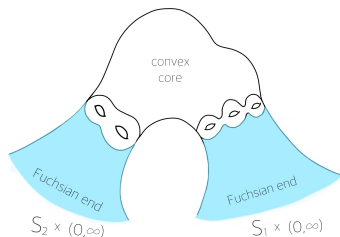


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- Any closed subgroup generated by unipotent elements is conjugate to  $U$  or  $H(U)$ .

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# Geodesic planes and horocycles

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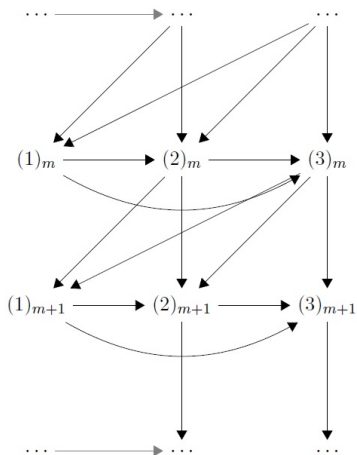
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Base cases (1)<sub>0</sub>, (2)<sub>0</sub>, (3)<sub>0</sub> follows from...

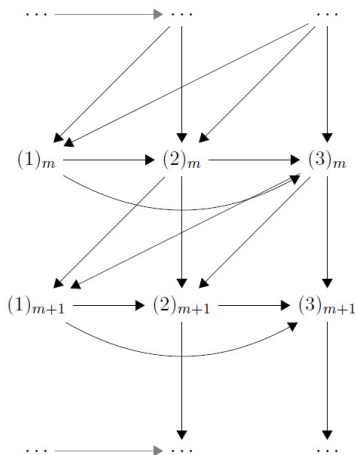
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$(2)_m, (3)_m$  holds  $\Rightarrow (1)_{m+1}$  holds  $\Rightarrow (2)_{m+1}$  holds  $\Rightarrow (3)_{m+1}$  holds .



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- 2 Enlarge to a bigger closed orbit  $y_1 L_1 \subset \overline{xH(U)}$ .

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(For given  $x_i$  converging to a generic point  $x$ , and  $T_i \rightarrow \infty$ , need  $t_i \in [T_i, 2kT_i]$  such that  $x_i u_{t_i}$  converges to a generic point.)

# The End of part I.