Seminário de Álgebra

Self-similar actions of Nilpotent Groups

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Abstract.

Let Γ be a finitely generated torsion free nilpotent group, and let A^ω be the space of infinite words over a finite alphabet A. We investigate two types of self-similar actions of Γ on A^ω, namely the faithfull actions with dense orbits and the free actions. A criterion for the existence of a self-similar action of each type is established.

Two corollaries about the nilmanifolds are deduced. Rougly speaking some geometrical properties of the nilmanifolds are connected with the symbolic dynamics of their fundamental groups.

Then we investigate the virtual actions of Γ, i.e. actions of a subgroup Γ' of finite index. A formula, with some number theoretical content, is found for the minimal size of an alphabet A endowed with a virtual self-similar action on A^ω of each type.

The main idea of the proof is based on the arithmetic properties of rational tori.