Title: **Self-similarity for τ groups.**

Abstract: Let Γ be a group, let Θ be a subgroup and let $f : \Theta \to \Gamma$ be a morphism. The f*-core* of Θ is the biggest subgroup $C \subset \Theta$ such that C is normal in Γ and $f(C) \subset C$. The pair (f, θ) is called a *similar data* for Γ if Θ and $f(\Theta)$ have finite index, if Ker$f$ is finite and if the f-core of Θ is trivial. The group Γ is called *self-similar* if it admits a similar data (f, θ). A self similar group acts faithfully on a tree. S. Sidki raised the question if any τ-group Γ is self-similar (a *a* τ*-group* is a finitely generated torsion-free nilpotent group).

Let Γ be a τ-group. There is a unique simply connected connected nilpotent Lie group N such that Γ embeds in N as a cocompact lattice. Let $\mathfrak{n}_\mathbb{R}$ be the Lie algebra of N, let $\mathfrak{n}_\mathbb{C} = \mathbb{C} \otimes_\mathbb{R} \mathfrak{n}_\mathbb{R}$ and let $\mathfrak{z}_\mathbb{C}$ be the center of $\mathfrak{n}_\mathbb{C}$. In the talk, we will explain the following result:

Theorem: *The group* Γ *is self-similar iff the Lie algebra* $\mathfrak{n}_\mathbb{C}$ *admits a* $\mathbb{Z}$*-grading:* $\mathfrak{n}_\mathbb{C} = \oplus_{i\in\mathbb{Z}} \mathfrak{n}_\mathbb{C}^i$ *such that* $\mathfrak{n}_\mathbb{C}^0 \cap \mathfrak{z}_\mathbb{C} = 0$.