

Geometric and Asymptotic Group Theory

Damian Osajda

damian.osajda@univie.ac.at

<http://www.mat.univie.ac.at/~dosaj/GGTWien/Course.html>

Dienstag, 11:00–12:00, Seminarraum 8 Oskar-Morgenstern-Platz 1 2.Stock

Blatt 2

Right-angled Artin groups — basics

- (1) Give an explicit example of a group which is not isomorphic to any RAAG.
- (2) Give an explicit example of a RAAG which cannot be decomposed as a free or direct product.
- (3) Show that a subgroup of a right-angled Artin group is not, in general, a right-angled Artin group.
- (4) Show that 3 definitions of a RAAG (combinatorial, universal, and topological) are equivalent.
- (5) For a set V of vertices of a graph Γ , denote by $\langle V \rangle$ the subgraph of Γ induced by V . Prove that $A(\langle V \cap W \rangle) = A(\langle V \rangle) \cap A(\langle W \rangle)$.
- (6) Let $G = \mathbb{F}_2 \times \mathbb{F}_2 = \langle a, b \rangle \times \langle u, v \rangle$. Show that the kernel of the map $G \rightarrow \mathbb{Z}$ mapping all the generators a, b, u, v to the generator of \mathbb{Z} , is not a RAAG.