Geometric and Asymptotic Group Theory II

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http://www.mat.univie.ac.at/∼dosaj/GGTWien/Course.html
Dienstag, 11:00–12:00, Raum D1.07 UZA 4

Blatt 2

Fully residually free groups

(1) Show that $\mathbb{Z}^3$ is fully residually free.

(2) Show the following properties of fully residually free groups:
- they are torsion free;
- any pair of elements generates either a free group or a free abelian group;
- any finitely generated subgroup is fully residually free.

(3) Prove that a fully residually free group G is *commutative transitive*: For all $g, h, k \in G \setminus \{1\}$ if $[g, h] = [h, k] = 1$ then $[g, k] = 1$.

(4) Show that $F_2 \times \mathbb{Z}$ is residually free (what does it mean?) but not fully residually free.