Geometric and Asymptotic Group Theory I

Damian Osajda
damian.osajda@univie.ac.at
http://www.mat.univie.ac.at/∼dosaj/GGTWien/Course.html
Dienstag, 11:00–12:00, Raum C2.07 UZA 4

Blatt 4

Small cancellation conditions and word problem

(1) For the following presentations:
   (a) $\langle a_1, b_1, ..., a_g, b_g \mid [a_1, b_1] \cdot ... \cdot [a_g, b_g] \rangle$,
   (b) $\langle S \mid r^n \rangle$, $n \geq 2$,
   (c) $\langle a, b \mid abab^2ab^3...ab^{100} \rangle$;
   find:
      (i) the symmetrized set of relators,
      (ii) pieces,
      (iii) λ for which the small cancellation condition $C'(\lambda)$ holds.

(2) Check whether the given word represents the identity in a corresponding group.
   (a) $d^{-1}acdc^{-1}d^{-1}aba^{-1}ba^{-1}b^{-1}cdc^{-1}d^{-1}b^{-1}cdc^{-1}$ in the genus two surface group $\langle a, b, c, d \mid [a, b][c, d] \rangle$;
   (b) $ab^2a^2b^{-2}a^{-1}b^2a^{-2}b^{-2}$ in $BS(1, 2) = \langle a, b \mid bab^{-1}a^2 \rangle$;
   (c) $ab^4a^4b^{-4}a^{-1}b^4a^{-4}b^{-4}$ in $BS(1, 2) = \langle a, b \mid bab^{-1}a^2 \rangle$.