

4. Let $\{s_1, \dots, s_n\}$ be the standard generating set for A_n . It turns out that the elements $\{s_1^2, s_2^2, \dots, s_n^2\}$ also generate an Artin group. Can you guess which Artin group this is?

5. Let D_Γ be the Deligne complex for Γ .

a) Describe a fundamental domain for the action $A_n \curvearrowright D_n$

b) Prove that the action is cocompact but not proper.

c) Let v_\emptyset be the vertex of D_Γ corresponding to A_\emptyset . Describe the 1-skeleton of $\text{link}(v_\emptyset)$. How is it related to Γ ?

d) Describe the higher dimensional simplices in $\text{link}(v_\emptyset)$ (that is, when does a set of vertices in $\text{link}(v_\emptyset)$ span a simplex?)

e) Using (c) and (d), conclude that $\text{link}(v_\emptyset)$ is a flag complex if and only if every clique in Γ spans a finite type A_T . (A simplicial complex Y is flag if every clique in the 1-skeleton spans a simplex in Y .)