
Simplicial Complexes

Summer semester 2016

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Sheet 8

- (1) Show that A_n is isomorphic to

$$\Sigma_B := \Delta(X_B, \subseteq), \text{ where } X_B := \{\text{span}(B') \mid \emptyset \neq B' \subsetneq B\},$$

where B is the basis of an $n + 1$ -dimensional abelian field V .

- (2) Let e_1, e_2, e_3 be the standard basis of \mathbb{R}^3 . Let $T_{1,2}$ and $T_{1,3}$ be the triangulations of the plane $\text{span}\{e_1, e_2\}$ and $\text{span}\{e_1, e_3\}$ in \mathbb{R}^3 with regular triangles, i.e., the vertices and edges on the line $\text{span}\{e_1\}$ agree. Let Δ be the associated simplicial complex of the two triangulations. Give a system of apartments such that Δ becomes a building. Show that this building is not an incidence complex. What happens if you also add the triangulation $T_{2,3}$ to the complex?
- (3) (a) Give an example of a chamber complex that is not an incidence complex.
(b) Give an example of an incidence complex that is not a chamber complex.
(c) Give an example of a chamber complex, that is an incidence complex but not a Coxeter complex.

Evaluation questions

- Did you have the prerequisites to follow the lecture?
- Did you find the lecture notes helpful?
- Was the course rather hard or easy?
- Was the pace rather slow or fast?
- Did the course become harder since it was held in English?
- How much additional time did you spend on the course a week (next to the lecture and the problem session)?
- Name three things that you like and dislike about the course (material, presentation, structure, handwriting, amount of details, overview, ...).
- As for the last chapter would rather hear about “Geometric and topological realizations” or “Higher order Laplace operators”?
- Did you mind the hours of the course?