

7. Übung zur Vorlesung Gebäude

Please hand in your solutions on the morning of Friday 25 May before the lecture.

Aufgabe 7.1 (1. Buildings of type A_1)

(3 marks) Suppose that G is a group acting on a building Δ of type A_1 . Prove that the action of the group is strongly transitive if and only if it is 2-transitive on $Cham(\Delta)$. (Recall that an action is 2-transitive if it is transitive on ordered pairs of distinct elements.)

Aufgabe 7.2 (2. Double cosets)

(3 marks) Suppose that Δ is a building of type (W, I) with apartment system \mathcal{A} and that G is a strongly transitive group of automorphisms of Δ . Let c be a chamber of Δ and let B be the stabiliser of the chamber in G . Let Σ be an apartment containing c and by abuse of notation use w to refer to an element of G that preserves Σ setwise and maps c to a chamber c' such that $\delta(c, c') = w$. Describe the set of all chambers which can be obtained from c under the action of the set $BwB \subseteq G$.