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Why buildings are interesting

Buildings are simplicial complexes which generalize certain aspects of the geometry of finite projective planes, Riemannian symmetric spaces and trees. They were first introduced by Jaques Tits as combinatorial objects associated to exceptional groups of Lie type. Up to now buildings have been used in several fields of mathematics, such as reductive algebraic groups over local fields and their presentations, Kac-Moody groups and geometric group theory. They form prime classes of examples for CAT(0) and CAT(1) spaces.

In this talk I will introduce buildings and provide some examples of spherical and affine ones. Afterwards I will highlight two examples of my own research where buildings are used to study algebraic and geometric properties of groups.

References