

Existence of certain affine buildings

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In 1986 Jacques Tits classified affine buildings of dimension at least three by showing that they correspond to Moufang buildings of rank at least three over a field with valuation. His result includes an existence proof of an affine building given a Moufang building over a field with valuation of arbitrary rank, up to a number of cases ('certaines formes de rang relatif 1 de groupes de types D_4 , E_6 , E_7 , E_8 et certains groupes de rang relatif 2 de type E_8 ').

From a geometric point of view this is a problem of fixed structures in affine buildings. In this talk we indicate which difficulties occur and how one can circumvent them in certain cases. These methods reduce the problem of existence to two rank one forms (of E_7 and E_8) and one rank two form of E_8 .

This is joint work with Bernhard Mühlherr, Hendrik Van Maldeghem and Richard Weiss.