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Abelian Tits Sets

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A Tits set is a pair (G,X) consisting of a group G and a conjugacy class X of subgroups satisfying certain conditions. It is called Abelian if the elements of X are Abelian and it is called a Moufang set if any two elements of X intersect trivially.

Moufang sets were introduced by Tits in the 1990s in order to extend the Moufang property to buildings of rank one. By the classification of Moufang polygons of Tits and Weiss, each Moufang building of rank at least two is associated with a simple algebraic group over a field or a variation thereof. It is an open question whether this is also true for Moufang sets.

Examples of Tits sets can be constructed from spherical Moufang buildings by means of a Tits index. The Tits sets obtained in this fashion are called of index type. Our main result asserts that each Abelian Tits set is of index type. As a corollary, we deduce that there is a natural correspondence between indecomposable Abelian Tits sets that are not Moufang sets (up to isomorphism) and simple Jordan algebras of finite capacity that are not division algebras (up to isotopy).

This is joint work with Paulien Jansen.

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