

Gluing two affine spaces

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Summary. A construction is described in [2] by which, given two or more geometries of the same rank n , each equipped with a suitable parallelism giving rise to the same geometry at infinity, we can glue them together along their geometries at infinity, thus obtaining a new geometry of rank $n + k - 1$, k being the number of geometries we glue. In this paper we will examine a special case of that construction, namely the gluing of two affine spaces.

1 Introduction

In this section I recall some definitions and some basic results from [2], in order to make this paper as self-contained as possible. Gluing of two affine spaces will be studied in the other sections of this paper.

1.1 Some notation and terminology

I am going to use a number of basic notions of diagram geometry. I refer to [16] for them. The only difference between the notation used in this paper and that of [16] is the meaning of the symbol $Aut(\Gamma)$. In [16] that symbol denotes the full automorphism group of Γ , whereas in this paper (as in [2]) $Aut(\Gamma)$ means the group of type-preserving automorphisms of Γ (denoted by $Aut_s(\Gamma)$ in [16]).

As in [16], the symbols c and Af , when used as labels for diagrams, mean *circular spaces* (i.e., complete graphs) and *affine planes*, respectively. The labels c^* and Af^* have the meanings dual of the above. We introduce the symbols

$$\bullet \xrightarrow{L_{Af}} \bullet \quad \text{and} \quad \bullet \xrightarrow{L_{Af}^*} \bullet$$

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