The triangular extensions of a generalized quadrangle of order (3,3)

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Abstract

We show that the triangular extension of a generalized quadrangle of order (3,3) is unique. The proof depends upon certain computer calculations.

1 Introduction and the result

Extensions of finite generalized quadrangles (EGQ, for short), or, more generally, of polar spaces, play a important role as incidence geometries admitting interesting automorphism groups, such as sporadic simple, or some classes of (extensions of) classical groups. Buekenhout and Hubaut [3] initiated the study of extensions of polar spaces from a geometric point of view by proving some characterization theorems, in particular they classified locally polar spaces such that the lines of the residual polar space are of size 3. They also classified locally polar spaces admitting a classical group acting on point residues, later on these results were generalized in a more general framework of flag-transitive diagram geometries, see the survey [22] by Pasini and Yoshiara for an extensive bibliography. However, very few characterizations are known which do not assume group actions. For polar lines of size 3, see already mentioned [3] and [2] by Buekenhout. Blokhuis and Brouwer [1] and P.Fisher [11] classified EGQ(3,1), The author [16, 18, 19] characterized extensions

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