Ferrara Dentice, Eva

A characterization of Grassmann spaces of index \( h \) of a projective space. (English) Eur. J. Comb. 23, No. 8, 891-898 (2002).

Author’s summary: In 1982/83 Bichara and Tallini characterized Grassmann spaces \( \text{Gr}(h, P) \) of a projective space \( P \) involving intersection properties of the two disjoint families of maximal subspaces of \( \text{Gr}(h, P) \). In 1984 Melone and Olanda characterized \( \text{Gr}(1, P) \) using only one family of maximal subspaces.

In this paper the generalization of the result of Melone and Olanda to general indices is given. More precisely, the author proves that the natural extension of the axiom of Melone and Olanda is not sufficient to characterize \( \text{Gr}(h, P) \) when \( h > 1 \), since the affine Grassmann space \( \text{Gr}(1, A) \) of the lines of an affine space \( A \) satisfies the axioms, too. Thus, an additional axiom is given and the characterization follows.

Reviewer: Corrado Zanella (Padova)

MSC:

- 51M35 Synthetic treatment of fundamental manifolds in projective geometries (Grassmannians, Veronesians and their generalizations)
- 14M15 Grassmannians, Schubert varieties, flag manifolds
- 51A45 Incidence structures embeddable into projective geometries

Keywords:

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