MR375070 (51 #11266) 50C15

Smith, James T.

Group theoretic characterization of elliptic geometries of arbitrary dimension.

Math. Nachr. **67** (1975), 265–272.

The object of the paper is to characterize the group of motions of an elliptic geometry of arbitrary (not necessarily finite) dimension n over a commutative field K. The characterization is based on earlier papers by the author [Geometriae Dedicata **1** (1973), 221–235; MR0315565; ibid. **1** (1973), no. 3, 334–339; MR0372733; ibid. **2** (1974), 485–497; MR0344986; ibid. **2** (1974), 349–370; MR0343153] and by H. Kinder and H. Wolff [Abh. Math. Sem. Univ. Hamburg **34** (1969/70), 252–265; MR0268763; Arch. Math. (Basel) **21** (1970), 515–527; MR0281091]. The geometry can be defined by means of a vector space K^{n+1} over K and a symmetric bilinear form Φ on K^{n+1}. In terms of Φ one can define a polarity, orthogonality of lines and reflection in a point. The compositions of point reflections constitute the group of motions of the geometry. The author shows how to build up the geometry and its group of motions axiomatically. *E. J. F. Primrose*