Embedding of attenuated spaces $H_q^{n,1}$ in Grassmann spaces $\mathcal{G}_{1,n,q}$

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Abstract

Debroey characterized in [D] all the semipartial geometries, with parameters (s,t,α,μ), satisfying the dual of Veblen-Young axiom (VY*) such that $\mu=\alpha(\alpha+1)$ or $\mu=\alpha^2$. These geometries are respectively the examples (E1) and (E2). In this paper, starting from a semipartial geometry D with parameters $(s,t,\alpha,\mu=\alpha(\alpha+1))$, $4\leq\alpha\neq t$, and satisfying (VY*), we construct a semipartial geometry with parameters ($s'=\alpha^2+\alpha$, $t'=t$, $\alpha'=\alpha+1$,$\mu'=(\alpha')^2$) satisfying (VY*) in which D is embedded. In this way we reconstruct the well known embedding of attenuated spaces $H_q^{n,1}$ in Grassmann spaces $\mathcal{G}_{1,n,q}$ using only arguments on semipartial geometries.

[D] Debroey, I.: Semi partial geometries satisfying the diagonalaxiom, *J. Geometry*, 13 (1979), 171–190.