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A scheme-theoretical characterization of Moore geometries.

Let S be a scheme of finite valency, and let L stand for a set of two involutions of S. For each element s in $\langle L \rangle$, we denote by $\ell(s)$ the smallest integer n which satisfies $s \in L^n$.

For each element q in $\langle L \rangle$, we define $E(q)$ to be the set of all elements r in $\langle L \rangle$ such that there exists an element p in $\langle L \rangle$ with $r \in pq$ and $\ell(r) = \ell(p) + \ell(q)$. By $E(L)$ we mean the intersection of the (two) sets $E(l)$ with $l \in L$.

It is easy to see that, as S is assumed to have finite valency, $E(L)$ is not empty. We shall see that, if $E(L)$ contains exactly one element, the coset geometry of $\langle L \rangle$ with respect to the (two) closed subsets $\langle l \rangle$ with $l \in L$ is a generalized polygon or a Moore geometry.

Which geometries (except from finite buildings) do we obtain (as coset geometries) if we delete the condition that L consists of only two elements? (Received January 16, 2005)