

DUAL SPREADS GENERATED BY COLLINEATIONS

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Suppose that we are given two different planes in a 3-dimensional projective space and a collineation of the first onto the second plane leaving invariant their common line without fixing any point. Joining points corresponding under this collineation yields a dual spread generated by a collineation. This construction is well known from classical geometry over the real numbers and has also been discussed e.g. in finite projective spaces. In either case such a dual spread is even a spread. But this result does not carry over to the general case, as will be illustrated by several examples which are based upon the following result:

There exists a collineation which generates a dual spread that is not a spread if, and only if, for a plane of the given projective space there is a collineation which has an invariant line but lacks to have invariant points.