

Kleinewillinghöfer types of finite Laguerre planes with at least 3 linearly transitive groups of G -translations

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Finite Laguerre planes of order n are incidence geometries that are precisely the transversal 3-designs of block size $n + 1$ with n points in each ‘group’. All known finite Laguerre planes are ovoidal, that is, they are obtained as the geometry of non-trivial plane sections of a cone over an oval in 3-dimensional projective space. It is a longstanding open problem whether or not these are the only models of finite Laguerre planes.

It is well known that central collineations play a crucial role in the study of projective planes. In 1979 R. Kleinewillinghöfer considered central automorphisms of (general) Laguerre planes and obtained a classification with respect to linearly transitive subgroups. In particular, for Laguerre translations she obtained 11 different possible types. One special kind of Laguerre translations are G -translations; except for the identity these are automorphisms that fix precisely the points of the generator G and every generator globally.

In this talk we consider G -translations in finite Laguerre planes and focus on the 3 types where there are at least 3 linearly transitive groups of G -translations. We discuss how these types relate to ovoidal Laguerre planes and elation Laguerre planes.