GEOMETRICALLY MOTIVATED IMPRIMITIVE TRANSFORMATION GROUPS.

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The best known transformation groups G occuring in geometries over rings are the affine and the projective groups acting on the affine respectively projective line over the rings L of dual numbers over commutative fields.
The affine group G has in the affine line $A(L)$ a system $\widetilde{\Omega}$ of blocks such that G induces on $\widetilde{\Omega}$ a sharply 2-transitive group and the inertia subgroup N of G which leaves each block B invariant induces in B also a sharply 2-transitive group. Moreover, if p_1, p_2 are points in two different blocks and q_1, q_2 are points such that q_i belongs to the same block as p_i for $i = 1, 2$, then there exist in N precisely one element mapping p_i onto q_i.
The projective group G has in the projective line $P(L)$ a system $\widetilde{\Omega}$ of blocks such that G induces on $\widetilde{\Omega}$ a sharply 3-transitive group and the inertia subgroup N of G which leaves each block B invariant induces in B a sharply 2-transitive group. Moreover, if p_1, p_2, p_3 are points in three different blocks and q_1, q_2, q_3 are points such that q_i belongs to the same block as p_i for $i = 1, 2, 3$, then there exists in N precisely one element mapping p_i onto q_i.
This classical situation motivated us to start a classification of imprimitive transformation groups G belonging to well known classes of groups (algebraic transformation groups, locally compact transformation groups, finite permutation groups) and acting on a set Ω with a system $\widetilde{\Omega}$ of blocks, both Ω and $\widetilde{\Omega}$ appertaining to the same category as G, such that following holds:
1. G induces on $\widetilde{\Omega}$ a sharply m-transitive group, where $m \geq 2$.
2. The inertia group N induces on each block a sharply n-transitive group, where $n \geq 2$.
3. If $p_i, 1 = 1, 2, , ..., m$, are points in m different blocks and $q_i, 1 = 1, 2, , ..., m$, are m points such that q_i belongs to the same block as p_i for $i = 1, 2, ..., 3m$, then there exist in N precisely one element mapping p_i onto q_i.

Our considerations yield that in positive characteristic the two-dimensiomal Witt rings play an analogous role as the rings of dual numbers.

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