

Locally Projective Graphs of $GF(2)$ -type

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Consider a connected graph Γ with a family \mathcal{L} of complete subgraphs (called lines), and possessing a vertex-transitive automorphism group G preserving \mathcal{L} . It is assumed that for every vertex x of Γ there is a $G(x)$ -bijection $\pi(x)$ between the set $\mathcal{L}(x)$ of lines containing x and the point-set of a projective $GF(2)$ -space. There is a number of important examples of such *locally projective graphs of $GF(2)$ -type* where both classical and sporadic simple groups appear among the automorphism groups. The ultimate goal is to classify these graphs up to their local isomorphism. This was achieved by V. I. Trofimov, S. V. Shpectorov and the present author for the case where the lines are of size 2. An approach of extending the classification to the case where the lines are of size 3 will be discussed in the lecture.