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The Paulus-Rozenfeld-Thompson graph on 26 vertices

Strongly regular graphs (SRGs) correspond to homogeneous coherent configurations of rank 3. In finding the smallest feasible parameter set on which no vertex-transitive SRG appears was already interested N. Biggs, one of the fathers of the Algebraic graph theory. In fact, the smallest order, on which this happens, is 26, and the corresponding parameter set is $(26,10,3,4)$. This parameter set is realized by 10 non-isomorphic graphs and the most symmetric among them is called the Paulus-Rozenfeld-Thompson graph T , having automorphism group of order 120 isomorphic to $A_5 \times C_2$, acting on the vertex set with two orbits of lengths 20 and 6.

The talk will provide a gentle introduction to a recently published comprehensive tutorial focusing on the graph T and putting it into the context of classical combinatorial objects.

(This work is joint with Mikhail Klin and Matan Ziv-Av.)