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AUTOMORPHISMS OF AN $AT4(4,4,2)$-GRAPH AND OF THE CORRESPONDING STRONGLY REGULAR GRAPHS

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A.A. Makhnev, D.V. Paduchikh, and M. M. Khamgokova gave a classification of distance-regular locally $GQ(5,3)$-graphs. In particular, there arises an $AT4(4,4,2)$-graph with intersection array $\{96,75,16,1;1,16,75,96\}$ on 644 vertices. The same authors proved that an $AT4(4,4,2)$-graph is not a locally $GQ(5,3)$-graph. However, the existence of an $AT4(4,4,2)$-graph that is a locally pseudo $GQ(5,3)$-graph is unknown. The antipodal quotient of an $AT4(4,4,2)$-graph is a strongly regular graph with parameters $(322,96,20,32)$. These two graphs are locally pseudo $GQ(5,3)$-graphs. We find their possible automorphisms. It turns out that the automorphism group of a distance-regular graph with intersection array $\{96,75,16,1;1,16,75,96\}$ acts intransitively on the set of its antipodal classes.

Keywords: distance-regular graph, graph automorphism.

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