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**AUTOMORPHISMS OF A DISTANCE-REGULAR GRAPH  
WITH INTERSECTION ARRAY  $\{176, 135, 32, 1; 1, 16, 135, 176\}$**

**A. A. Makhnev, D. V. Paduchikh**

A distance-regular graph  $\Gamma$  with intersection array  $\{176, 135, 32, 1; 1, 16, 135, 176\}$  is an  $AT_4$ -graph. Its antipodal quotient  $\bar{\Gamma}$  is a strongly regular graph with parameters  $(672, 176, 40, 48)$ . In both graphs the neighborhoods of vertices are strongly regular with parameters  $(176, 40, 12, 8)$ . We study the automorphisms of these graphs. In particular, the graph  $\Gamma$  is not arc-transitive. If  $G = \text{Aut}(\Gamma)$  contains an element of order 11, acts transitively on the vertex set of  $\Gamma$ , and  $S(G)$  fixes each antipodal class, then the full preimage of the group  $(G/S(G))'$  is an extension of a group of order 3 by  $M_{22}$  or  $U_6(2)$ . We describe automorphism groups of strongly regular graphs with parameters  $(176, 40, 12, 8)$  and  $(672, 176, 40, 48)$  in the vertex-symmetric case.

Keywords: strongly regular graph, distance-regular graph, graph automorphism.

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