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ON AUTOMORPHISMS OF DISTANCE-REGULAR GRAPHS WITH INTERSECTION ARRAYS $\{2R+1, 2R-2, 1; 1, 2, 2R+1\}$

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Let Γ be an antipodal graph with intersection array $\{2r+1, 2r-2, 1; 1, 2, 2r+1\}$, where $2r(r+1) \leq 4096$. If $2r+1$ is a prime power, then Mathon's scheme provides the existence of an edge-symmetric graph with this intersection array. Note that $2r+1$ is not a prime power only for $r \in \{7, 17, 19, 22, 25, 27, 31, 32, 37, 38, 42, 43\}$. We study automorphisms of hypothetical distance-regular graphs with the specified values of r. The cases $r \in \{7, 17, 19\}$ were considered earlier. We prove that, if Γ is a vertex-symmetric graph with intersection array $\{2r+1, 2r-2, 1; 1, 2, 2r+1\}$, $2r+1$ is not a prime power, and $r \leq 43$, then $r = 25, 27, 31$.

Keywords: distance-regular graph, graph automorphism.

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