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ON FINITE SIMPLE CLASSICAL GROUPS OVER FIELDS OF DIFFERENT CHARACTERISTICS WITH COINCIDING PRIME GRAPHS

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Suppose that G is a finite group, $\pi(G)$ is the set of prime divisors of its order, and $\omega(G)$ is the set of orders of its elements. We define a graph on $\pi(G)$ with the following adjacency relation: different vertices r and s from $\pi(G)$ are adjacent if and only if $rs \in \omega(G)$. This graph is called the *Gruenberg–Kegel graph* or the *prime graph* of G and is denoted by $GK(G)$. Let G and G_1 be two nonisomorphic finite simple groups of Lie type over fields of orders q and q_1, respectively, with different characteristics. It is proved that, if G is a classical group of a sufficiently high Lie rank, then the prime graphs of the groups G and G_1 may coincide only in one of three cases. It is also proved that, if $G = A_1(q)$ and G_1 is a classical group, then the prime graphs of the groups G and G_1 coincide only if $\{G, G_1\}$ is equal to $\{A_1(9), A_1(4)\}$, $\{A_1(9), A_1(5)\}$, $\{A_1(7), A_1(8)\}$, or $\{A_1(49), {}^2A_3(3)\}$.

Keywords: finite simple classical group, prime graph, spectrum.

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