Lewis, Mark L.; White, Donald L.
Four-vertex degree graphs of nonsolvable groups. (English) Zbl 1278.20003

Summary: For a finite group $G$, the character degree graph $\Delta(G)$ is the graph whose vertices are the primes dividing the degrees of the ordinary irreducible characters of $G$, with distinct primes $p$ and $q$ joined by an edge if $pq$ divides some character degree of $G$. We determine all graphs with four vertices that occur as $\Delta(G)$ for some nonsolvable group $G$. Along with previously known results on character degree graphs of solvable groups, this completes the classification of all four-vertex graphs that occur as $\Delta(G)$ for some finite group $G$.

MSC:

- 20C15 Ordinary representations and characters
- 20D60 Arithmetic and combinatorial problems involving abstract finite groups
- 05C25 Graphs and abstract algebra (groups, rings, fields, etc.)
- 20D06 Simple groups: alternating groups and groups of Lie type

Keywords: finite groups; character degrees; character degree graphs; finite nonsolvable groups; irreducible characters

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