

The circular chromatic index of line graphs of cubic snarks

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Cubic snarks are cubic graphs that are not 3-edge-colorable. It is known [1] that the line graphs of cubic snarks are regular graphs of degree 4 with the chromatic index 5, as they are not 4-edge-colorable. This makes them interesting from the view of circular edge-colorings. However, there are no results regarding the circular chromatic index of such graphs.

We show that for each cubic graph with $\chi'_c(G) = 4$, the value of the circular chromatic index of the line graph $L(G)$ is equal to 5. When assuming a bridgeless cubic graph G of girth at least 5, then the circular chromatic index of the line graph $L(G)$ is at most $14/3$. Moreover, if we restrict ourselves to graphs with oddness 2, then we can improve this bound to $9/2$.

REFERENCES

- [1] A. Kotzig, From the theory of regular graphs of third and fourth degree, Čas. pěst. mat. (Math. Bohem.) 82:1 (1957), 76–92 (in Slovak).