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Perfect double covers with paths of length four. (English) Zbl 0839.05079

J. A. Bondy [Perfect path double covers of graphs, J. Graph Theory 14, No. 2, 259-272 (1990; Zbl 0745.05038)] conjectured that every $k$-regular graph has a family of paths $\mathcal{F}$ such that each edge belongs to exactly two paths and each vertex occurs exactly twice as an endvertex of a path in $\mathcal{F}$. It is easy to see that, if the conjecture is true, all paths in such a family $\mathcal{F}$ must have the same length—$k$. The conjecture is known to be true for $k = 1, 2, 3$. The paper provides a proof of the conjecture for $k = 4$.

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MSC:

05C70 Edge subsets with special properties (factorization, matching, partitioning, covering and packing, etc.)

05C38 Paths and cycles

Keywords:

graph covers; edge-decompositions; paths

Full Text: DOI