

CLASSIFYING VERTEX-TRANSITIVE GRAPHS OF ORDER A PRODUCT OF TWO DISTINCT PRIMES

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(Joint work with Ted Dobson)

In the 1990's two distinct groups of researchers worked on classifying vertex-transitive graphs of order qp , where q and p are distinct primes. This work is mainly concerned with such vertex-transitive graphs whose automorphism group contains a transitive subgroup with a normal block system. Intuitively, this means they primarily consider those graphs with automorphism group an almost simple group.

We give a refined classification when the automorphism group contains a transitive subgroup with a normal block system. It was stated in the 1990's that all such graphs are isomorphic to metacirculant graphs, and we give a classification of metacirculant graphs of order qp into disjoint families. As the isomorphism problem has been solved for metacirculant graphs of order qp , this will lead to an enumeration of vertex-transitive graphs of order qp in future work, a longstanding open problem for which several partial results have been given. Our work also holds for digraphs.

References

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