Liu, Jiuqiang

Hamiltonian decompositions of Cayley graphs on Abelian groups. (English) Zbl 0809.05058

Discrete Math. 131, No. 1-3, 163-171 (1994).

The author considers when the Cayley graph $\mathrm{cay}(A, S)$, where $(A, +)$ is a group, A denotes the vertex set and $S \subseteq A$, $0 \notin S$, determines the edges of the graph (xy is an edge if and only if $x - y \in S \cup -S$), has a Hamilton decomposition. It is shown that such a decomposition exists: (1) if $S = \{s_1, \ldots, s_k\}$ is a generating set of A such that $\gcd(\mathrm{ord}(s_i), \mathrm{ord}(s_j)) = 1$ for $i \neq j$, or a minimal generating set of A with $k = 3$ and with either two elements of order 2 or one element of prime order; and (2) if A is an Abelian group of odd order and $S = \{s_1, s_2, s_3\}$ is a minimal generating set of A.

Reviewer: K.Heinrich (Burnaby)

MSC:

- 05C25 Graphs and abstract algebra (groups, rings, fields, etc.)
- 05C38 Paths and cycles
- 05C45 Eulerian and Hamiltonian graphs
- 05C70 Edge subsets with special properties (factorization, matching, partitioning, covering and packing, etc.)

Keywords:

Cayley graph; Hamilton decomposition; generating set; Abelian group

Full Text: DOI

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