

**Opatrny, J.; Sotteau, D.**

**Linear congruential graphs.** (English) Zbl 0739.05074

Graph theory, combinatorics, algorithms, and applications, Proc. 2nd Int. Conf., San Francisco/CA (USA) 1989, 404-415 (1991).

Summary: [For the entire collection see [Zbl 0734.00014](#).]

For an integer  $n$  and a finite set of linear functions  $F = \{f_i(x) = (a_i x + c_i), 1 \leq i \leq k\}$  we define a linear congruential graph of type 1 as a graph on vertex set  $\{0, 1, \dots, n-1\}$  in which any  $x \in \{0, 1, \dots, n-1\}$  is adjacent to  $f_i(x) \bmod n$ ,  $1 \leq i \leq k$ . Similarly, for an even integer  $n$ , a linear congruential graph of type 2 is a graph on vertex set  $\{0, 1, \dots, n-1\}$  in which any  $x \in \{0, 1, \dots, n-1\}$  is adjacent to  $f_i(x) \bmod n$ ,  $1 \leq i \leq k-1$ , and any even vertex  $x \in \{0, 1, \dots, n-2\}$  is adjacent to  $f_k(x) \bmod n$ .

Some theoretical and empirical properties of linear congruential graphs are given and the structure of these graphs is studied. A suitability of linear congruential graphs for interconnection networks is considered, and a comparison to other network models is done.

**MSC:**

[05C75](#) Structural characterization of families of graphs

[94C15](#) Applications of graph theory to circuits and networks

Cited in 1 Document

**Keywords:**

[linear congruential graph of type 1](#); [linear congruential graph of type 2](#)