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**Isomorphic star decompositions of multicrowns and the power of cycles.** (English)

[Zbl 0994.05113](#)

*Ars Comb.* 53, 249-256 (1999).

A crown  $C_{n,k}$  for integers  $n, k$  with  $k \leq n$  is the graph whose vertex set is  $\{a_1, \dots, a_n, b_1, \dots, b_n\}$  and in which each edge joins a vertex  $a_i$  for some  $i \in \{1, \dots, n\}$  with a vertex  $b_j$ , where  $j$  is congruent with someone of the numbers  $i + 1, \dots, i + k$  modulo  $n$ . If each edge of  $C_{n,k}$  is replaced by  $\lambda$  edges with the same end vertices as it had, the multicrown  $\lambda C_{n,k}$  is obtained. It is proved that  $\lambda C_{n,k}$  can be decomposed into copies of the star  $S_\ell$  with  $\ell$  edges if and only if  $\ell \leq k$  and  $\lambda_{nk} \equiv 0 \pmod{\ell}$ . This implies also that the  $k$ th power of the cycle  $c_n$  of length  $n$  can be decomposed in that way if and only if  $\ell \leq k + 1$  and  $nk \equiv 0 \pmod{\ell}$ .

Reviewer: [Bohdan Zelinka \(Liberec\)](#)

**MSC:**

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

Cited in **12** Documents

**Keywords:**

[crown](#); [star](#); [decomposition](#)