A reduction of the spectrum problem for sun systems

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A k-cycle with a pendant edge attached to each vertex is called a k-sun. When we approached the existence problem for k-sun systems of order v, complete solutions were known only for $k = 3, 4, 5, 6, 8, 10, 14$ and for $k = 2^t$. Here, we reduce this problem to the orders v in the range $2k < v < 6k$ satisfying the obvious necessary conditions. Thanks to this result, we provide a complete solution whenever k is an odd prime, and some partial results whenever k is twice a prime.

1) M. Buratti, A. Pasotti, T. Traetta, *A reduction of the spectrum problem for odd sun systems and the prime case*, J. Combin. Des. **29** (2021), 5–37.

2) A. Pasotti, T. Traetta, *Even sun systems of the complete graph*, in preparation.