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MR2920000 (Review) 05C51 05B07

Cantrell, Daniel (1-ETNS); **Coker, Gary D.** (1-FMU-NDM);
Gardner, Robert [Gardner, Robert Bentley] (1-ETNS)

Cyclic, f-cyclic, and bicyclic decompositions of the complete graph into the 4-cycle with a pendant edge. (English summary)

Util. Math. **87** (2012), 245–253.

Let $[a, b, c, d; e]$ denote the graph $H = C_4 \cup \{e\}$, i.e., $V(H) = \{a, b, c, d, e\}$ and $E(H) = \{\{a, b\}, \{b, c\}, \{c, d\}, \{a, d\}, \{a, e\}\}$, the 4-cycle with a pendant edge. An H-decomposition of K_v exists if and only if $v \equiv 0, 1 \pmod 5$, $v \geq 10$ [J.-C. Bermond et al., Ars Combin. **10** (1980), 211–254; MR0598914]. An automorphism of an H-decomposition is a permutation of the point set which fixes the block set. An automorphism is said to be *cyclic* if it consists of a single cycle, is said to be f-*cyclic* if it consists of f fixed points and a single cycle, and is said to be *bicyclic* if it consists of two disjoint cycles. In the paper under review, the authors give nice proofs for the necessity and sufficiency for the existence of cyclic, f-cyclic, and bicyclic H-decompositions of K_v.

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