On z-cycle factorizations with two associate classes where $z \in \{ka, k\}$ with even parameters

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Let $K = K(a, p; \lambda_1, \lambda_2)$ be the multigraph with: the number of vertices in each part equal to a; the number of parts equal to p; the number of edges joining any two vertices of the same part equal to λ_1; and the number of edges joining any two vertices of different parts equal to λ_2. The existence of C_4-factorizations of K has been settled when a is even; when $a \equiv 1 \pmod 4$ with one exception; and for very few cases when $a \equiv 3 \pmod 4$. The existence of C_z-factorizations of K has been settled when $a \equiv 1 \pmod z$ and λ_1 is even; when $a \equiv 0 \pmod z$; and when $z = 2a$ and $z \in \{4, 4a\}$ where both a and λ_1 are even. In this paper, we give history and current progress regarding z-cycle factorizations of K, specifically, we give progress when $z \in \{ka, k\}$ with even parameters.

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