On $z$-cycle factorizations with two associate classes

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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 $\lambda_1$; and the number of edges joining any two vertices of different parts equal to $\lambda_2$. The existence of $C_4$-factorizations of $K$ has been settled when $a$ is even; when $a \equiv 1 \pmod{4}$ with one exception; for very few cases when $a \equiv 3 \pmod{4}$; and when $a \equiv 1 \pmod{z}$ and $\lambda_1$ is even, and when $a \equiv 0 \pmod{z}$. In this paper, we discuss latest results and further problems.

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