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RESEARCH PROBLEMS

With this volume of Discrete Mathematics, a Research Problem Section is being established. Problems in this section are intended to be research level problems rather than standard exercises. People wishing to submit such problems should send them (in duplicate) to:

Professor Brian Alspach,
Department of Mathematics,
Simon Fraser University,
Burnaby, B.C. V5A 1S6,
Canada.

The following should be included: (1) The name of the person(s) who originally posed the problem; (2) the name and address of a person willing to act as a correspondent; and (3) references and other pertinent information.

The Editorial Board of Discrete Mathematics invites readers to provide information about solutions, partial results and other pertinent items related to problems posed earlier, if possible indicating the source of the information, for example papers appearing in different journals, preprints, etc. This information will be passed along to readers from time to time in order to keep them appraised of the current status of various problems.

People wishing to provide information about problems that appeared earlier should write to Professor Alspach. People wishing to correspond on technical matters concerning a problem should write to the correspondent.

Problem 3. Posed by Brian Alspach.

Correspondent: Brian Alspach,
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Let n be any positive integer and let $a_1+a_2+\cdots+a_r$ be a partition of either $\binom{n}{2}$ if n is odd or $\binom{n}{2}-\frac{1}{2}n$ if n is even such that $3\leq a_i\leq n$ for $i=1,2,\ldots,r$. Does there then exist a partition of the edge-set of K_n when n is odd or K_n-I when n is even into cycles of lengths $a_1, a_2, \ldots, a_r$ where K_n denotes the complete graph of order n and K_n-I denotes the complete graph with a 1-factor removed?

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Problem 4. Posed by Alan Hartman.

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Australia.

A 1-factorization of a graph is a partition of the edge-set into 1-factors. Is it the case that every graph with $2n$ vertices and regular of degree n has a 1-factorization?

Reference

Bill Jackson, Edge-disjoint Hamilton cycles in regular graphs of large degree, J. London Math. Soc. (Ser. 2) 19 (1979) 13–16.