PROBLEMS COLUMN

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## ON STRONGLY CONNECTED ORIENTATIONS OF GRAPHS

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We consider finite, loopless graphs or digraphs, without multiple edges or arcs (with no pairs of opposite arcs). Let G = (V, E) be a graph. A digraph D = (V, A) is an orientation of G if A is created from E by replacing every edge of E by an arc in one direction.

Let  $n_d$  denote the number of vertices with the degree d in G. By the degree pair of a vertex  $v \in V$  in D the ordered pair [outdegree(v), indegree(v)] is meant.

It is easy to see that if there exists a strongly connected orientation D of a graph G with pairwise different degree pairs of vertices in D then in G we have  $n_d < d$  for every positive integer d.

**Conjecture.** Let G be an undirected graph and let  $n_d < d$  for every positive integer d. Then there exists a strongly connected orientation D of G with pairwise different degree pairs of vertices.

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