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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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