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Finding compatible circuits in eulerian digraphs.

Let G be an eulerian digraph with a fixed edge-coloring (not necessarily proper). A compatible circuit T is an eulerian circuit of G such that no consecutive edges in the circuit have the same color. We provide necessary and sufficient conditions for the existence of a compatible circuit in eulerian digraphs that do not contain vertices of outdegree three. We present partial results for digraphs with vertices of outdegree three.