Edge-partitioning a graph into paths: beyond the Barát-Thomassen conjecture

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Abstract

The Barát-Thomassen conjecture asserts that, for every fixed tree T with t edges, there is a positive constant c_T such that every c_T-edge-connected graph G with number of edges divisible by t has a partition of its edges into copies of T. This conjecture was mainly verified for T being a tree of small diameter, until Botler, Mota, Oshiro and Wakabayashi recently proved it for T being a path of any length.

We here consider the influence of the minimum degree parameter on these considerations. As a somewhat stronger result, we prove that every 24-edge-connected graph G can be decomposed into copies of any given path, provided the path length divides $|E(G)|$ and the minimum degree of G is large enough. Here 24 should not be optimal, as we expect the same result to hold for 3-edge-connected graphs.

This is an ongoing work with A. Harutyunyan and S. Thomassé.