

Separation systems of subdivisions

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A (strong) separating path system of a graph G is a family of paths such that for each ordered pair of edges of G there is a path which contains the first edge but does not contain the second edge. There has been a surge of interest in finding small separating path systems in the last decade. Bonamy et al showed that the smallest size of a separating path system of an n -vertex graph G is $O(n)$ which is best possible by results of Balogh et al. Recently, Botler and Naia conjectured that we could replace the paths that form the separating system with other families of graphs. Namely, they conjectured that for any fixed graph H with at least one edge, any n -vertex graph G has a separating system of size $O(n)$ consisting of subdivisions of H and single edges. (The single edges are necessary, and we allow dependence on H in the term $O(n)$.) We show Botler and Naia's conjecture is true. This is joint work with George Kontogeorgiou, Matias Pavez-Signé, S. Taruni and Ana Trujillo-Negrete.

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