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Path eccentricity and the consecutive one property

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The eccentricity of a path P in a graph G is the maximal distance from P to any vertex of the graph G. The *path eccentricity* of a graph G is the minimal eccentricity over all paths in G.

Gómez and Gutiérrez [1] asked if there is a relation between the path eccentricity of a graph and the consecutive one property.

A graph G is said to have the *open consecutive one property* if its vertices can be ordered such that the open neighborhood of every vertex is consecutive in this order. The closed consecutive one property is defined similarly with respect to closed neighborhood.

We characterise graphs with the open and closed consecutive one property and show that graphs having those properties have path eccentricity at most 1. That is, there exists a path which is at distance at most 1 from any vertex of G.

We also consider a generalisation of the consecutive one property where for each vertex we can consider either the closed or the open neighborhood, and study the path eccentricity of the graphs having such property.

Références

[1] R. Gómez and J. Gutiérrez, *Path eccentricity of graphs*, Discrete Applied Mathematics 337 (2023), 1–13.