



# Some structural, metric and convex properties on the boundary of a graph<sup>1</sup>

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## Abstract

Let  $u, v \in V$  be two vertices of a connected graph  $G$ . The vertex  $v$  is said to be a *boundary vertex* of  $u$  if no neighbor of  $v$  is further away from  $u$  than  $v$ . The boundary of a graph is the set of all its boundary vertices. In this work, we present a number of properties of the boundary of a graph under different points of view: (1) a realization theorem involving different types of boundary vertex sets: extreme set, periphery, contour, and the whole boundary; (2) the boundary is an edge-geodetic set, and the contour is a monophonic set; (3) the boundary is a resolving set.

*Keywords:* Boundary, Contour, Extreme set, Graph convexity, Metric dimension.

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