

# On Graceful Labelings of Cycles

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## Abstract

Suppose that  $G$  is a connected graph with  $n$  vertices and  $m$  edges. A vertex labeling  $f : V(G) \rightarrow \{0, 1, 2, \dots, m\}$  such that distinct vertices have distinct labels induces an edge labeling where an edge  $xy$  gets the label  $|f(x) - f(y)|$ . If the edges are labeled  $1, 2, \dots, m$  then the labeling is called graceful.

A long standing and well-known conjecture states that every tree has a graceful labeling. In this presentation we describe an algorithm for computing graceful labelings of cycles. We also discuss some relationships between graceful labelings of paths and cycles.