

## ON $q$ -POWER CYCLES IN CUBIC GRAPHS

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### Abstract

In the context of a conjecture of Erdős and Gyárfás, we consider, for any  $q \geq 2$ , the existence of  $q$ -power cycles (i.e., with length a power of  $q$ ) in cubic graphs. We exhibit constructions showing that, for every  $q \geq 3$ , there exist arbitrarily large cubic graphs with no  $q$ -power cycles. Concerning the remaining case  $q = 2$  (which corresponds to the conjecture of Erdős and Gyárfás), we show that there exist arbitrarily large cubic graphs whose all 2-power cycles have length 4 only, or 8 only.

**Keywords:** cubic graphs,  $q$ -power cycles, Erdős-Gyárfás conjecture.

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