

**Title:** Towards a Conjecture on Long Induced Rainbow Paths in Triangle-Free Graphs

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**Abstract:** Given a triangle-free graph  $G$  with chromatic number  $k$  and a proper vertex coloring  $\phi$  of  $G$ ,

it is conjectured that  $G$  contains an induced rainbow path on  $k$  vertices under  $\phi$ .

Scott and Seymour proved the existence of an induced rainbow path on  $(\log \log \log k)^{1/3 - o(1)}$  vertices.

We improve this bound to  $(\log k)^{1/2 - o(1)}$ . Further, we prove the existence of an induced path that sees  $k/2$  colors.

This is joint work with N.R. Aravind and Rogers Mathew. It is available at <https://arxiv.org/abs/2601.00602>

