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RAMSEY NUMBERS OF FAMILY $\mathcal{P}_3$

We study multicolor Ramsey numbers for the family $\mathcal{P}_3$ of 3-uniform minimal paths of length three. We prove that $R(r; \mathcal{P}_3) = r + 5$ for every $1 \leq r \leq 11$. Our approach is based on Turán-type methods. As a key ingredient, we determine the relevant Turán numbers and higher-order Turán numbers for $\mathcal{P}_3$, together with the corresponding extremal 3-uniform hypergraphs. By analyzing them we find the upper bound for $R(r; \mathcal{P}_3)$. The lower bound is found by special construction.