

On the local density problem for graphs of given odd-girth

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Resumo/Abstract:

Erdős conjectured that every n -vertex triangle-free graph contains a subset of $\lfloor n/2 \rfloor$ vertices that spans at most $n^2/50$ edges. Extending a recent result of Norin and Yepremyan, we confirm this conjecture for graphs homomorphic to so-called Andrásfai graphs. As a consequence, Erdős' conjecture holds for every triangle-free graph G with minimum degree $\delta(G) > 10n/29$ and if $\chi(G) \leq 3$ the degree condition can be relaxed to $\delta(G) > n/3$. In fact, we obtain a more general result for graphs of higher odd-girth.