Diameters of duals are linear

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Abstract

For every oriented tree $T$ there exists a graph $D_T$ (called the dual of $T$) such that $T \not	o G \iff G \to D_T$ holds for every $G$ (an arrow denotes the existence of a homomorphism). An explicit construction of $D_T$ has been found recently. Although the $D_T$ constructed this way may have exponential number of vertices in $|V(T)| = n$, we will prove that its diameter is linear in $n$ (and therefore $D_T$ is "small" in some sense).