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Discrepancy of trees. (In English)
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For a graph L let $E(L)$ be its edge set. Let $\varphi : E(K_n) \to \{1,2\}$ be a two-coloring of the edges of the complete graph K_n and let

$$D_n(L,\varphi) := \max\left| |\varphi^{-1}(1) \cap E(L^*)| - \frac{|E(L^*)|}{2} \right|,$$

where the maximum is extended over all subgraphs L^* of K_n isomorphic to L. The discrepancy of L is defined by $D_n(L) := \min D_n(L,\varphi)$, where the minimum is extended over all $\varphi : E(K_n) \to \{1,2\}$. Let T_n be a tree on n vertices, $\Delta(T_n)$ be the maximum degree in T_n and $\tau(T_n)$ be the minimum size of a vertex cover in T_n. The following inequalities are proved: If $\Delta(T_n) \geq 0.8n$ then $D(T_n) \geq (n-1-\Delta(T_n))/6$, if $n > m_0$ and $\Delta(T_n) < 0.8n$ then $D(T_n) > n \cdot 10^{-3}$, if $\Delta(T_n)$, $\tau(T_n) \leq k \leq n/8$ then $D(T_n) \geq \frac{n}{2} - 4k$. Several interesting problems and conjectures are mentioned.

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Classification:
05C05 Trees
05C55 Generalized Ramsey theory
05D10 Ramsey theory
05C35 Extremal problems (graph theory)

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