Cordial Sets of Hypercubes

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For a graph $G = (V, E)$ with a binary vertex coloring $f : V(G) \to \mathbb{Z}_2$, let $v_f(i) = |f^{-1}(i)|$. We say f is friendly if $|v_f(1) - v_f(0)| \leq 1$, i.e., the number of vertices labeled 1 is the same or almost the same as the number of vertices labeled 0. The coloring f induces an edge labeling $f^* : E(G) \to \mathbb{Z}_2$ defined by $f^*(uv) = f(u) + f(v) \pmod 2$, for each $uv \in E(G)$. Let $e_f(i) = |\{uv \in E(G) : f^*(uv) = i\}|$. The cordial index of f is the number $c(f) = |e_f(0) - e_f(1)|$, and the cordial set of G is $C(G) = \{c(f) : f \text{ is a friendly labeling of } G\}$. In this talk, we discuss the cordial sets of hypercubes.

Keywords: friendly labeling, cordial set, hypercubes