1086-05-221 **Ryan Sullivan*** (rsullivan@students.stonehill.edu), Department of Mathematics, Stonehill College, Easton, MA 02357, and **Hsin-hao Su** (hsu@stonehill.edu), Department of Mathematics, Stonehill College, Easton, MA 02357. *The Edge-balance Index Set of Two and Three Level Wheels.*

Let G be a simple graph with vertex set $V(G)$ and edge set $E(G)$. Any edge labeling f induces a partial vertex labeling $f^+ : V(G) \to \{0, 1\}$ depending on whether there are more 0-edges or 1-edges incident with v, and no label is given to $f^+(v)$ otherwise. For each $i \in \{0, 1\}$, let $v_f(i) = |\{v \in V(G) : f^+(v) = i\}|$ and let $e_f(i) = |\{e \in E(G) : f(e) = i\}|$. An edge-labeling f of G is said to be edge-friendly if $\{|e_f(0) - e_f(1)| \leq 1$. The edge-balance index set of G is defined as $\{|v_f(0) - v_f(1)| :$ the edge labeling f is edge-friendly.$\}$.

Because of the definition of the edge-balance index, the calculation of the edge-balance index set depends highly on the structure of a graph. A wheel graph is formed by a cycle with additional edges connected to a center vertex. Because the wheel graph is the first special graphs whose edge-balance index sets do not form a arithmetic progression, we generalized it into two or three level wheels by adding one or two more layers of cycles with connecting edges. In this paper, we determined the exact values of the edge-balance index sets of two or three level wheels. (Received August 07, 2012)