1077-05-2084 **Henry Escuadro*** (escuadro@juniata.edu) and **Futaba Fujie-Okamoto**. *Total Detection Numbers of Graphs.*

Let G be a connected graph of order $n \geq 3$ and let $c : E(G) \to \{1, 2, \ldots, k\}$ be a coloring (or labeling) of the edges of G for some positive integer k (where adjacent edges may be colored the same). The *color code* of a vertex v of G is the ordered k-tuple

$$\mathrm{code}_c(v) = (a_1, a_2, \cdots, a_k) \text{ (or simply } \mathrm{code}_c(v) = a_1 a_2 \cdots a_k),$$

where a_i is the number of edges incident with v that are colored i for $1 \leq i \leq k$. The coloring c is a *detectable coloring* if distinct vertices of G have distinct color codes.

For a detectable coloring $c : E(G) \to \{1, 2, \ldots, k\}$ of a graph G, we define the *value* of c as

$$\mathrm{val}(c) = \sum_{e \in E(G)} c(e).$$

The *total detection number* of G is defined by

$$\mathrm{td}(G) = \min\{\mathrm{val}(c)\}$$

where the minimum is taken over all detectable colorings of G.

In this talk, we investigate the total detection numbers of cycles and complete graphs. (Received September 21, 2011)