1030-05-257 **Seog-Jin Kim*** (skim12@konkuk.ac.kr), Department of Mathematics Education, Konkuk University, Seoul, 143-701, South Korea, and **Jon-Lark Kim** (jl.kim@louisville.edu), Department of Mathematics, University of Louisville, Louisville, KY 40292. *Identifying Codes in q-ary hypercube.* Preliminary report.

Identifying codes were introduced by Karpovsky, Chakrabarty, and Levitin (1998) in order to find fault processors in a multiprocessor system. We assume that some processors can check themselves and their neighbors at distance one, and report if there is a default. The problem is to choose as few checking processors as possible so that if we see the reports, we know which processor is malfunctioning.

Let $\mathcal{C}$ be a subset of the vertex set of a graph G. If $N_G[u] \cap \mathcal{C} \neq \emptyset$ for each vertex u in G and $N_G[u] \cap \mathcal{C} \neq N_G[v] \cap \mathcal{C}$ for all distinct vertices u and v in G, then $\mathcal{C}$ is called an identifying code for the graph G.

Let q be any integer ≥ 2. We consider the q-ary hypercube whose vertex set is $\mathbb{Z}_q^n$ and two vertices $(x_1, \cdots, x_n)$ and $(y_1, \cdots, y_n)$ are adjacent if $x_i = y_i$ for all i except one index, say j, and $x_j - y_j = \pm 1 \pmod{q}$. As a natural extension of identifying codes in binary Hamming spaces, we study identifying codes in the above q-ary Lee spaces. (Received August 05, 2007)