

THE MAIN CODING THEORY PROBLEM

- FOR A GIVEN q, n, M
CONSTRUCT A q -ary
 (n, M, d) ~~code~~ code
with max d
- FOR A GIVEN q, n, d
CONSTRUCT A q -ary
 (n, M, d) code C with
max M ($M = |C|$)

THE PROBLEM IS STILL OPEN

NOTE:

$A_q(n, d)$ - the largest
value of M : there exists
a q-ary (n, M, d) code

$$A_q(n, 1) = q^n$$

$$C = \bar{z}q^n$$

$$A_q(n, n) = q$$

$$C = \left\{ \begin{array}{l} 00\dots 0 \\ 11\dots 1 \\ 22\dots 2 \\ \dots \\ (q-1)\dots (q-1) \end{array} \right\}$$

THE FUNCTION
KNOWN

$A_q(n, d)$ is not