Robert B Ellis* (rellis@math.iit.edu). Coverings containing packings for adaptive binary block coding. Preliminary report.

We present an algorithm which simultaneously constructs an optimal covering containing an optimal packing of the discrete hypercube $Q_q = \{0, 1\}^q$ from an optimal covering containing an optimal packing of $Q_{q-1}$. The packing/covering sets used are adaptive radius 1 hamming balls of size $q + 1$, which are relaxations of the standard radius 1 hamming balls in $Q_q$. The relaxation here corresponds to allowing feedback on a binary symmetric communication channel. The corresponding non-adaptive versions of these packings and coverings are error-correcting codes with minimum distance 3 and covering codes with covering radius 1, respectively. (Received September 27, 2005)