

Maximum two-distance sets in Hamming, Johnson and Euclidean space.

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This is joint work with Barg, Glazyrin, Kao, Lai, Tseng

We address the maximum size of binary codes and binary constant weight codes with few distances. Previous works established a number of bounds for these quantities as well as the exact values for a range of small code lengths. As our main results, we determine the exact size of maximal binary codes with two distances for all lengths. We also determine the maximum size of two-distance sets in R^n for n between 9 to 14.

Theorem 1. *The maximum size of two-distance sets in binary Hamming space is $1 + \frac{n(n-1)}{2}$ for all codewords length n at least 6.*