Geometry Seminar
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# A coding problem for pairs of sets

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**Abstract**

Let $X$ be an $n$–element finite set, $0 < k < n/2$ an integer. Suppose that $(A_1, B_1)$ and $(A_2, B_2)$ are pairs of disjoint $k$-element subsets of $X$ (that is, $|A_1| = |B_1| = |A_2| = |B_2| = k, A_1 \cap B_1 = \emptyset, A_2 \cap B_2 = \emptyset$). Define the distance of these pairs by $d((A_1, B_1), (A_2, B_2)) = \min\{|A_1 - A_2| + |B_1 - B_2|, |A_1 - B_2| + |B_1 - A_2|\}$. One can see that this is really a distance on the space of such pairs. $C(n, k, d)$ denotes the maximum number of pairs $(A, B)$ with pairwise difference at least $d$. The motivation comes from database theory. The lower and upper estimates use Hamiltonian type theorems, traditional code constructions and Rödl's method for packing.

For further information contact Janos Pach at pachcims.nyu.edu, or visit our website: http://www.math.nyu.edu/seminars/geometry_seminar.html