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Hitting all the n -tuples from a distance

For given integers $n, q \geq 2$, we seek the smallest size of a set S of q -ary n -tuples with the property that every q -ary n -tuple differs from some member of S in every coordinate. This is equivalent to computing the total domination number of a certain graph, namely the graph having $\mathbb{Z}_q^n$ as its vertex set and two vertices joined by an edge whenever they are at maximum Hamming distance n . This talk is based on joint work with Sam Adriaensen (VUB), Ferdinand Ihringer (SUSTech), and Ralihe Villagran (WPI).