

Cells in the box and a hyperplane

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It is well known that a line can intersect at most $2n - 1$ cells of the $n \times n$ chessboard. We consider the high dimensional version: how many cells of the d -dimensional $n \times \dots \times n$ box can a hyperplane intersect? We also prove the lattice analogue of the following well-known fact. If K, L are convex bodies in \mathbb{R}^d and $K \subset L$, then the surface area of K is smaller than that of L . Joint work with Peter Frankl.