

Ten points in a square

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It is a standard exercise on Pigeonhole Principle to prove:

If you place 10 distinct points in a square of side 1, then at least two points will have distance no more than $\sqrt{2}/3$ (about 0.4714).

My question: This number is an upper bound for the minimum positive distance. Has anyone found the least upper bound?

(It is at least $1/3$, just place the points at lattice points with stepsize $1/3$. With slightly more effort, one can replace $1/3$ by $\sqrt{2}/(2*\sqrt{2}+1)$, about 0.3694.)

By the way, tens of millions of pseudorandom experiments have not exceeded 0.32.

Cheers, ZVK(Slavek).

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