# On the Largest Axes-Parallel Rectangle among Points in a Square 

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Given $S$, a set of $n$ points contained in the unit square $Q=[0,1]^{\wedge} 2$, let $f(S)$ denote the area of the largest axes-parallel rectangle that does not contain any of the points of $S$ in its interior. Further, let $f(n)$ be the minimum value of $f(S)$ over all sets $S$ of $n$ points in Q. In 2009, Dumitrescu and Jiang proved that $f(2)=(3-\sqrt{5}) / 2, f(4)=1 / 4$, and the following general bounds for $f(n)$ : $(1.25-o(1))$ $\cdot 1 / n \leq f(n) \leq 4 \cdot 1 / n$. We show that $f(3)=0.3079 \ldots, 0.2192<f(5)<0.2215$, and we improve the bounds in the general case: $(1.31-o(1)) \cdot 1 / n \leq f(n) \leq 1.91 \cdot 1 / n$.

## Awards Won:

Third Award of \$1,000
American Mathematical Society: Third Award of \$500

