1154-52-23 **Taeyang David Park*** (taeyangpark0801@gmail.com), Peddie School, 201 South Main St, Hightstown, NJ 08520, and **Seo Yeong Shauna Kwag** (kwags@blair.edu), Blair Academy, 2 Park St, Blairstown, NJ 07825. *On the largest axis-parallel empty rectangle among points in a square.*

Given S, a set of n points contained in the unit square $Q = [0,1]^2$, let $f(S)$ denote the area of the largest axis-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 $f(n)$:

$$(1.25 - o(1)) \cdot \frac{1}{n} \leq f(n) \leq 4 \cdot \frac{1}{n}.$$

We show that $f(3) = 0.3079\ldots$, $0.2192 < f(5) < 0.2215$, $0.1835 < f(6) < 0.1962$, and we improve the bounds in the general case:

$$(1.31 - o(1)) \cdot \frac{1}{n} \leq f(n) \leq 1.91 \cdot \frac{1}{n}.$$

(Received June 08, 2019)