

Almost Congruent Triangles

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Almost 50 years ago Erdős and Purdy asked the following question: Given n points in the plane, how many triangles can be approximate congruent to equilateral triangles?

They pointed out that by dividing the points evenly into three small clusters built around the three vertices of a fixed equilateral triangle, one gets at least $\lfloor \frac{n}{3} \rfloor \cdot \lfloor \frac{n+1}{3} \rfloor \cdot \lfloor \frac{n+2}{3} \rfloor$ such approximate copies. We present a matching upper bound and thereby answer their question. More generally, for every triangle T we determine the maximum number of approximate congruent triangles to T in a point set of size n .

This is joint work with J. Balogh and A. Dumitrescu.