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The average distance of maximal planar graphs

The average distance $\mu(G)$ of a finite connected graph G is defined as the arithmetic mean of the distances between all pairs of distinct vertices of G . We show that for every maximal planar graph G of order n ,

$$\mu(G) \leq \frac{1}{18}n + O(n^{1/2}),$$

which asymptotically proves a recent conjecture by Che and Collins. We further show that this bound can be improved for 4-connected and 5-connected maximal planar graphs.

This is joint work with Eva Czabarka, Trevor Olsen, and Laszlo Szekely.