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New bounds for untangling geometric graphs

Suppose that we are given a straight-line drawing D of a planar graph G such that some pairs of edges cross. Since G is planar, it can be redrawn (by relocating some of its vertices) such that no two edges cross anymore. The process of redrawing G to obtain a crossing-free straight-line drawing is called the *untangling* of G. For every $n \in \mathbb{N}$, there is a planar graph G_0 with n vertices and a straight-line drawing D_0 of G_0 such that in any *crossing-free* straight-line drawing of G_0, at most $O(n^{.4981})$ vertices lie at the same position as in D_0. For every planar graph G with n vertices and every straight-line drawing D of G (with possible edge crossings), there is a *crossing-free* straight-line drawing of G such that at least $\Omega(n^{0.3766})$ vertices are at the same position as in D. (Joint work with Arikushi, Cano, and Urrutia.)