

Contraction Decomposition for Unit Disc Graphs and Algorithmic Implications

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Given a graph G and an integer k , a contraction decomposition consists of a partition of the edges of G into k color classes such that the contraction of any one class results in a graph of treewidth $O(k)$. Starting as an extension of Baker's technique, such decompositions have been proven to exist for planar graphs up to H -minor-free graphs, with many algorithmic consequences for approximation and parameterized algorithms. In this talk, I will present a proof of the existence of such a statement for unit disc graphs.

Joint work with S. Bandyapadhyay, D. Lokshtanov, S. Saurabh, and J. Xue.