Approximating clique–width in $O(n^9 \log(n))$ time.

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Abstract. The clique-width of a graph, denoted by $cwd(G)$ is a complexity measure of a graph, such that if a class of graphs has bounded clique–width and we're given a k–expression, which is related to the clique–width, as an input, many NP–hard problems are solvable in polynomial time. But, it is open whether there is an polynomial-time algorithm to decide $cwd(G) \leq k$ and if so, construct the k-expression. I will showe the approximation algorithm for the clique-width; for fixed k, it decides either $cwd(G) > k$ or $cwd(G) \leq f(k)$, and if $cwd(G) \leq f(k)$, it also gives a $f(k)$–expression of G. Its time complexity is $O(n^9 \log(n))$, where k is hidden in the constant of O notation. By combining with this algorithm, algorithms for bounded clique–width don't have to require the k–expression as an input. The same idea also gives an approximation algorithm for the branch–width of a matroid.