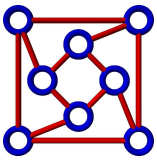

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TWIN-WIDTH AND FEEDBACK EDGE NUMBER

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Twin-width is a graph parameter introduced in 2020 by Bonnet et al., and it has attracted a lot of attention since then. It has been shown that FO model checking is FPT when parameterized by twin-width (given a certificate of small twin-width as part of the input). At the same time, many graph classes have bounded twin-width, including planar graphs and graphs of bounded treewidth. It is easy to see that twin-width is in $\mathcal{O}(k)$ when k is the feedback edge number, i.e., the number of edges one needs to remove to destroy all cycles. In this talk, we show how to improve this bound to $\mathcal{O}(\sqrt{k})$, which is asymptotically tight. We also mention a few related results, namely an FPT algorithm for recognizing graphs of twin-width 2 and an FPT approximation of twin-width with a constant additive error, both parameterized by the feedback edge number.