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HOW TO BOUND TREEWIDTH: STRUCTURE AND ALGORITHMS

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What structural graph properties are helpful in designing efficient algorithms? Tree decompositions have been successfully used for this purpose, provided that the decomposition is not too "complicated". But how uncomplicated is simple enough? And when can we guarantee that such a decomposition exists?

Tree decompositions have been extensively studied in the context of forbidden graph minors; investigating them in connection with graph containment relations of more local flavor (such as induced subgraphs) is a relatively new research direction. In this talk, we will discuss recent progress in this area and the connection to different measures of decomposition complexity.