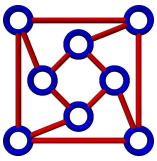

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ALGORITHMS FOR H-FREE GRAPHS

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Many fundamental graph problems are NP-hard in general but are known to be solvable in polynomial time on some classes of H-free graphs, that is, graphs without an induced copy of a fixed graph H.
The motivation for studying the complexity of NP-hard problems in this setting is twofold: One, to understand which structural properties make these problems hard, and two, to provide efficient algorithms for NP-hard problems on rich classes of graphs. Ideally, one would like to obtain a full dichotomy between the graphs H for which the problem is NP-hard on H-free graphs and the rest, for which we know a polynomial time algorithm on H-free graphs.
I will focus on two problems: Maximum Weight Independent Set and 3-Colouring. The aforementioned dichotomy is available for neither of the problems, despite significant research efforts. However, we have a good understanding of what the dichotomy should be. In my talk, I will survey results in this area.