

INTERPLAY BETWEEN STRUCTURE AND ALGORITHMS

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The structure of even-hole-free graphs, odd-hole-free graphs and perfect graphs has been studied intensely since the 90s. Structural results led to polynomial time recognition and optimization algorithms, and yet some key open problems remain. For example, it has been known since late 90s that even-hole-free graphs can be recognized in polynomial time, they have polynomially many maximal cliques, so trivially the clique problem is polynomially solvable, but it is still not known whether vertex coloring and independent set problems can be solved in polynomial time for even-hole-free graphs. The study of these classes led to development of general techniques that can be applied to understanding other hereditary classes. In this talk we will survey these results focusing on developmental interplay between structure and algorithms.